DATA RECORD OF CURRENT OBSERVATIONS
VOLUME XIV

JOHNSTONE STRAIT
1973

by W.S. Huggett, J.F. Bath, A. Douglas

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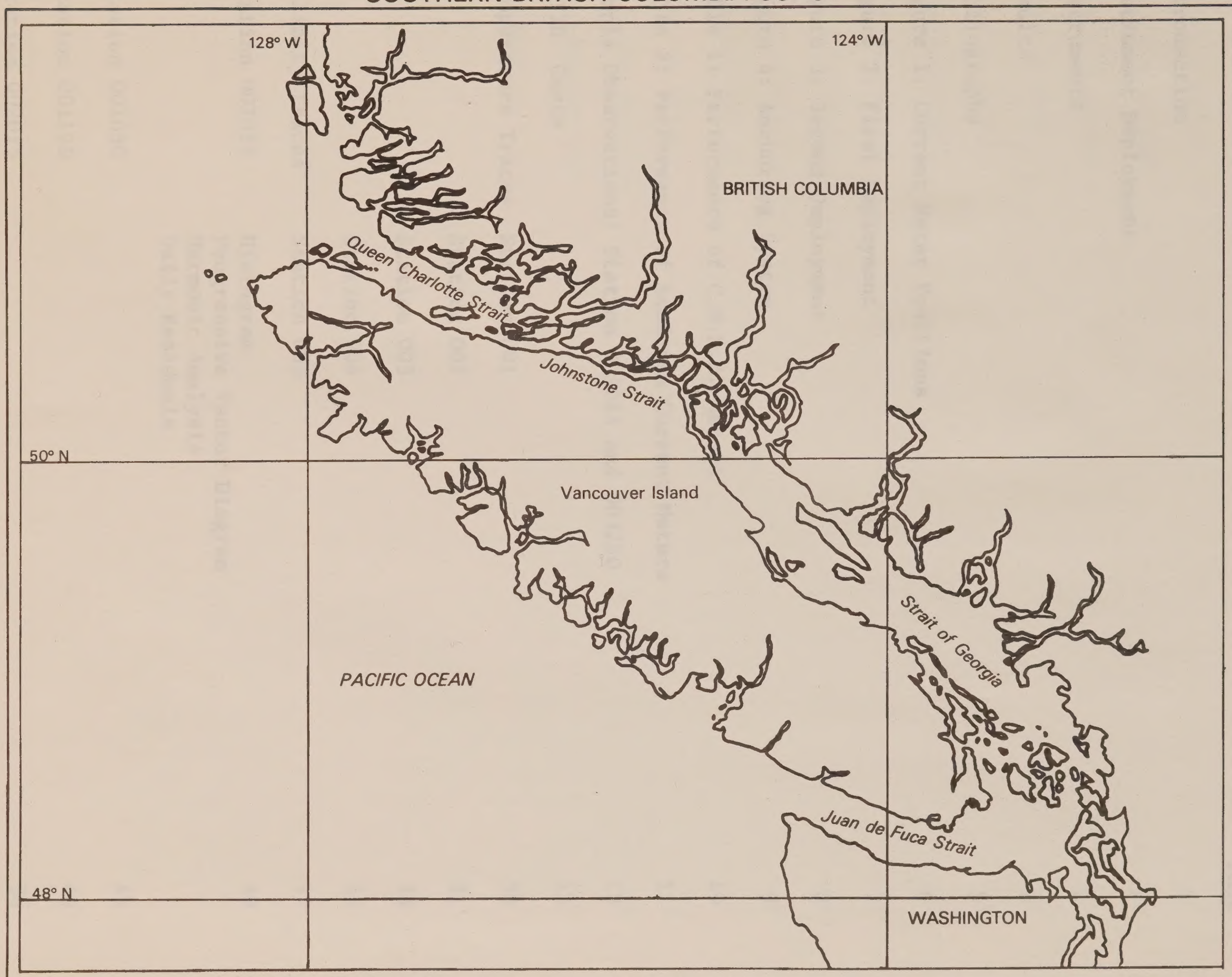
SOUTHERN BRITISH COLUMBIA COAST



INDEX

1. Introduction

The primary purpose of these measurements in Johnstone Strait was to investigate the flushing mechanism of the Strait of Georgia by simultaneously measuring the currents in Johnstone Strait and Juan de Fuca Strait. To this end continuous records of currents, (and temperature and conductivity at some locations) were obtained in Johnstone Strait for a period approaching four months. Temperature and salinity profiles were also taken at eleven stations along the strait.

2. Instrument Deployment

Nineteen current meters distributed among five arrays were bottom-moored across Johnstone Strait 1 1/2 miles west of Port Neville, (Figure 1). The arrays consisted of either two or five current meters with each meter attached to its own buoyancy float by a 3 metre length of 3/4 inch polypropylene line (Figure 4). The anchoring system consisted of two anchors joined by a one-inch polypropylene ground line. One anchor of two railway wheels was placed under the meter string and the other anchor of one railway wheel was attached to the other end of the 600 metre ground line, used to recover the arrays. These arrays were moored from February 20 to June 11, 1973, and were serviced once during this time (April 9-11). All moorings were laid from the C.S.S. Parizeau.

The positions have been labelled 1 to 5 starting from the mainland, or north side of the strait. In our standard three figures notation for station numbers and three figures for depth (in metres from the surface), the current meters are designated by a six-figure number (e.g. 002075 - station 2, depth 75 m) and used throughout this paper to identify each particular position where measurements were taken.

The current meters were moored to record at depths of 15, 75, 150 and 225 metres from the surface and 5 metres above the bottom. The two end arrays, moored in shallower water than the middle three, carried two meters each, while the middle three arrays were broken down into two strings each, with one string carrying only one meter at the 15 m depth, while the other string carried four meters at the remaining depths. The reason for mooring the 15 m current meters on a separate string was to minimize losses in case the near surface meters and floats became entangled with tow lines from the large number of tugboats which use the strait. Especially worrisome are the tugs with log booms, which because of their slow speed, tend to drag the arrays for miles rather than cut the lines.

The two arrays on either side of the strait, Stations 1 and 5, were anchored on a steeply sloping bottom with a surface buoy attached to the single railway wheel at the other end of the ground line. These buoys were glas donut type fitted with flashing lights and radar reflectors. The surface buoys were used to aid in the recovery of the array because of the difficulty in dragging for a ground line over such a steep and rocky bottom so close to the shore. Station 5 on the Vancouver Island (south) side of the strait was never recovered, although the

surface buoy was found in Forward Bay, ten miles west of its moored position. For this reason the array has been left out of Figure 3 as there is no data for the meter positions. Station 1 was actually moored 35 metres deeper than anticipated due to the steepness of the bottom at that point.

STD measurements were made over two nights, April 10 and 11, with the measurements on the first night consisting of five stations in mid-channel and run from east to west over a 30 mile stretch. On the second night ten measurements were taken one hour apart in latitude 50°28'N and longitude 126°06'W.

3. Instruments

Two makes of current meters were used on this project, the Aanderaa RCM4 and the Neyrpic CMDR. The former current meters recorded the average speed over a 15 minute interval and the instantaneous direction at the end of each period on 1/4 inch magnetic tape. In addition, every Aanderaa meter recorded the temperature, three recorded the pressure and two the conductivity. The manufacturer's specifications for the Aanderaa current meters are: direction ±5°, temperature ±0.1°C and pressure ±1%; speed and conductivity are not specified but the speed range is given as 1.5 -250 cm/sec. Since it was not possible at the time to calibrate the pressure sensors for absolute depth or long-period drift, only relative changes in pressure are meaningful. The Neyrpic CMDR current meters accumulate a pulse count from an impeller and, together with an instantaneous compass direction, are punched on a Friden paper tape every ten minutes. The manufacturer specifies that the operating range of the instrument is 3-600 cm/sec with the relationship between current speed and impeller speed accurate to within 1%.

The STD casts were made on a Bissett-Berman model 9006. Calibration of the instrument has been based upon the numerous casts made during the Strait of Juan de Fuca portion of the project. These suggest that on the average the instrument ranged from 0.12 ^{o}/oo high at the surface to 0.16 ^{o}/oo high at a depth of 220 m, while temperature readings were nearly 0.08°C low at all depths (Thomson, 1976). Manufacturer's specifications for this instrument are ±0.03°C for temperature, ±0.05 ^{o}/oo for salinity and ±1% for depth.

4. Results

4.1 Mooring Motion

Because of the subsurface floatation there was, at times, considerable tilt in the lines. This problem was somewhat aggravated by the original underestimation of the current speeds involved, particularly at depth. According to Thomson, the data shows that the mooring cable was bowed concave upward, and this observation has been verified by a computer model for the mooring system. He also states that for a given segment of the cable, the maximum tilt angles would have occurred at the bottom and minimum angles at the surface, with the effect of floatation above each instrument reducing the local wire angle by a few degrees. As a consequence, the current meters below

mid-depth would have been susceptible to a slight underestimation of the horizontal speeds which, as the extreme, would have amounted to a reduction of 0.9 (Θ=56°) from the actual value. Above mid-depth on the other hand, we can assume that the moorings were approximately vertical under all but the most extreme conditions, so that measured speeds represented true speeds, and depth excursions that took place at mid-depth instruments were also applicable to those at shallower levels. Lastly, we note that although depth increases were at times large, they represented few samples out of the data set. Of the nearly 6000 15-minute interval pressure records at 003150, for example, only 49 corresponded to depth increases over 40 m and only six gave increases over 55 m; 92% of the recorded depth increases were between 0-20 m, and the mean was 7 m with a standard deviation of ±10 m (Thomson, 1976).

Nominal depths have been used to show the data, and no corrections have been applied to the speeds.

4.2 Current Observations

Of the fifteen Aanderaa current meters used, only three failed to function the whole time (Table 2). One failed because of rotor trouble, and the other two because of low clock batteries. Two meters were lost from Station 5, and were not replaced, and the subsurface floatation buoy at Station 004075 sank after ten days, disrupting readings from the meter at Station 004225.

Of the nine CMDR current meters used only three functioned the whole time (Table 1) and one other worked for 33 out of 49 days before the paper take-up jammed. All the rest, except for the two on Stations 004150 and 004310 that functioned for the 9 days before the sinking of the buoy at Station 004075, had impeller trouble from electrical contacts on the gearing mechanism becoming corroded through heavy sparking. These meters were not as efficient as the Aanderaa meters and are the main cause of the large gaps in the data.

One of the surprising aspects of Johnstone Strait was the magnitude of the tidal currents in the deep water. The amplitude of M_2, the principal semi-diurnal constituent, for stations at 250 metres was double that for stations at 15 and 75 metres. The amplitude of M_2 above 100 m was fairly constant at 26 cm/sec (±3 cm/sec), but below 100 m it increased to a maximum of 48 cm/sec around 250 m with a corresponding change in the Greenwich phase (~30 minutes). The amplitude of the principal diurnal constituent, K_1 increased from 8.5 cm/sec at the surface to 13 cm/sec at depths of 150 m and 225 m. However, the Greenwich phase angle of K_1 varied far greater than that of M_2 changing by as much as 90° from top to bottom, with the surface water lagging the deeper water by about 6 hours.

Another interesting feature in this area is the distribution of the residual current (Total current - tidal current = residual current). There is a null speed level at a depth of 100-120 metres; above this depth the residual current is west-going and below it, east-going. On the surface the average speed is 24 cm/sec and appears to decrease with depth to the zero speed depths of 100-120 metres. Below 120 metres the

residual current increases again until a maximum speed of 20 cm/sec is reached around 250 metres.

The extent of the bias in the upper and lower depths of the Strait is shown by the records of the up-strait component at Station 003 at 15 m and 250 m depths on pages 12-14. The records are typical of the data observed in Johnstone Strait.

From page 30 the temperature and salinity graphs are shown as recorded on the Aanderaa current meters. The meters were not calibrated before or after the survey, and the manufacturer's calibration rating for the temperature and conductivity sensors has been used.

On June 23, 1976, the current meter from Station 5 at 15 m depth was, by great good fortune and luck, recovered. The 1/4 inch wire used between the two current meters at the station must have parted after nearly three years immersion (which is longer than one would expect). The sub-surface float, together with the current meter, which was attached to the float by a ten-foot polypropylene rope, were found and recovered by a local fisherman. Although the bottom end-plate of the Aanderaa current meter was missing and the instrument itself was a write-off, we were fortunate in being able to recover the magnetic tape and all the data. The progressive vector diagram (p 147) showed a definite change in characteristics after twenty-seven days, and because of this the data has been broken down into two sets (pp 148-155). The first set of data runs for twenty-seven days, and is assumed to be in position at the 15 m depth, while the second set is the last thirty-eight days and is listed at 55 m depth. As there was no pressure transducer on the instrument, the depth of 55 m is an educated guess. The geographical position of the instrument for the second set in all likelihood is close by, but could be miles away. Due to the steepness and rocky nature of the bottom on the original position, the odds are that the instrument was not moved too far before the anchors would become jammed on the bottom and part the buoy lines.

BIBLIOGRAPHY

Thomson, Richard E., 1976. Tidal Currents and Estuarine-type circulation in Johnstone Strait, British Columbia. J. Fish. Res. Bd. Canada (in press).

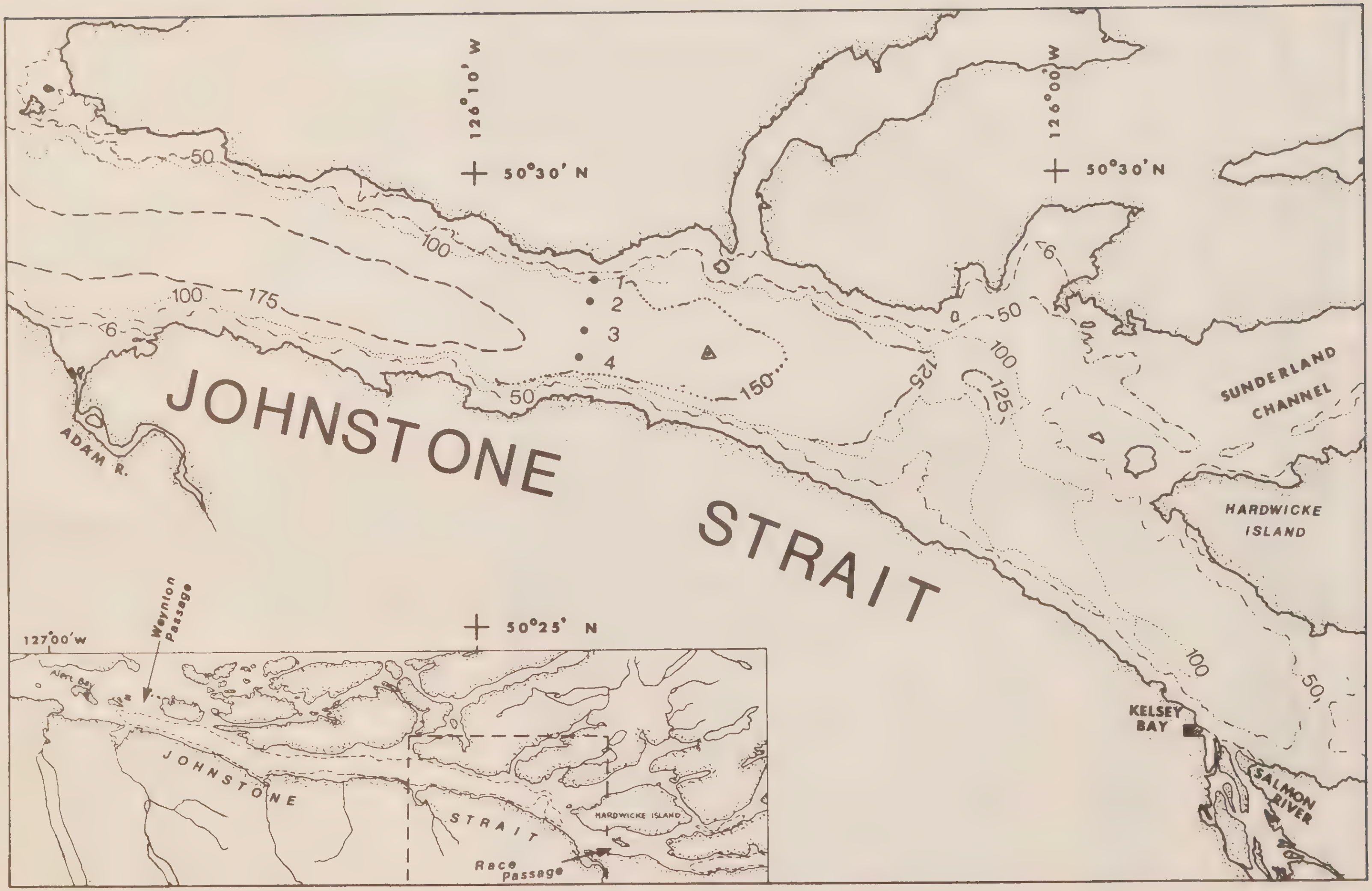


Figure 1: Current Meter Positions

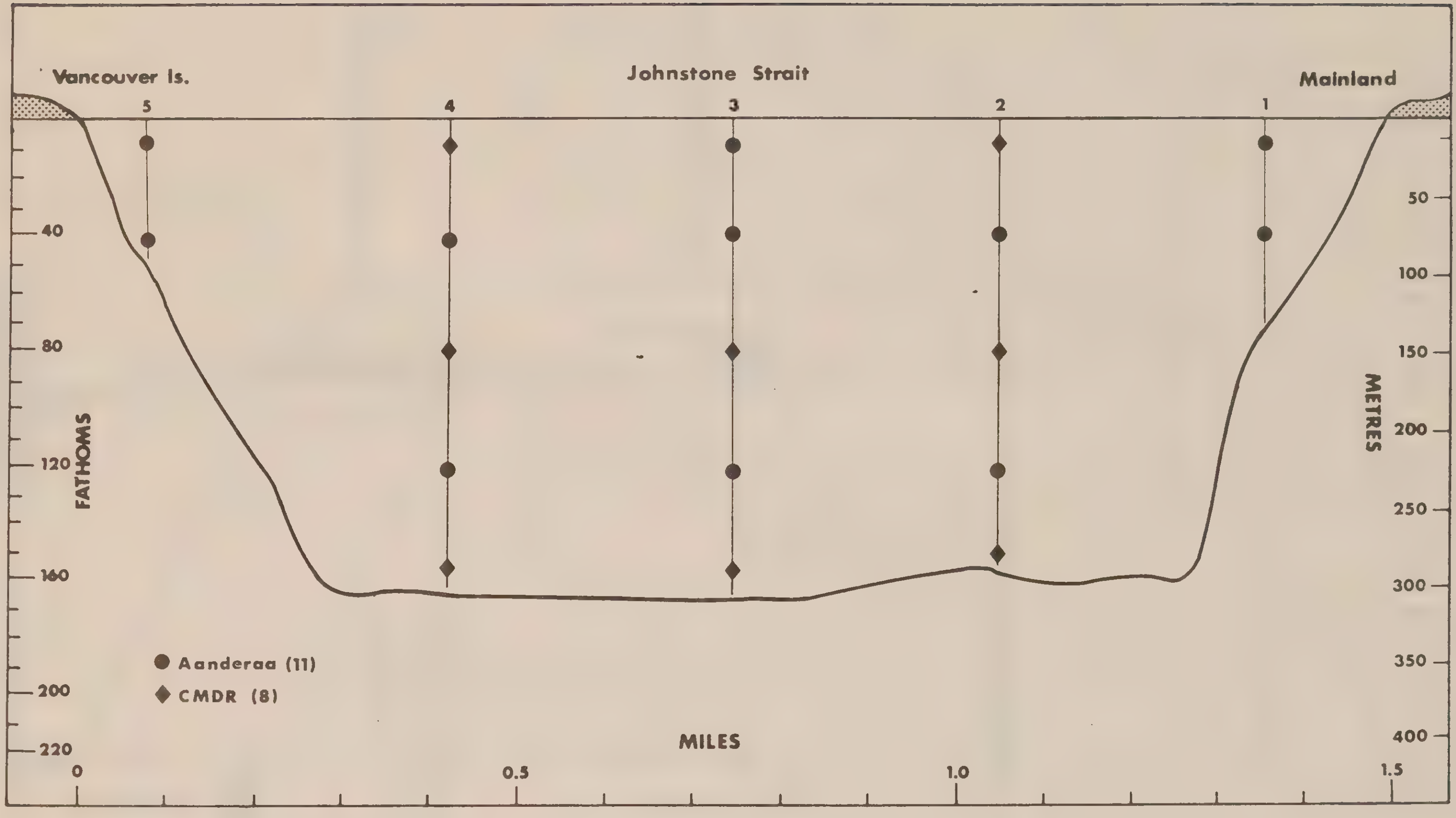


Figure 2: FIRST DEPLOYMENT
Feb. 20, 1973 to April 10, 1973

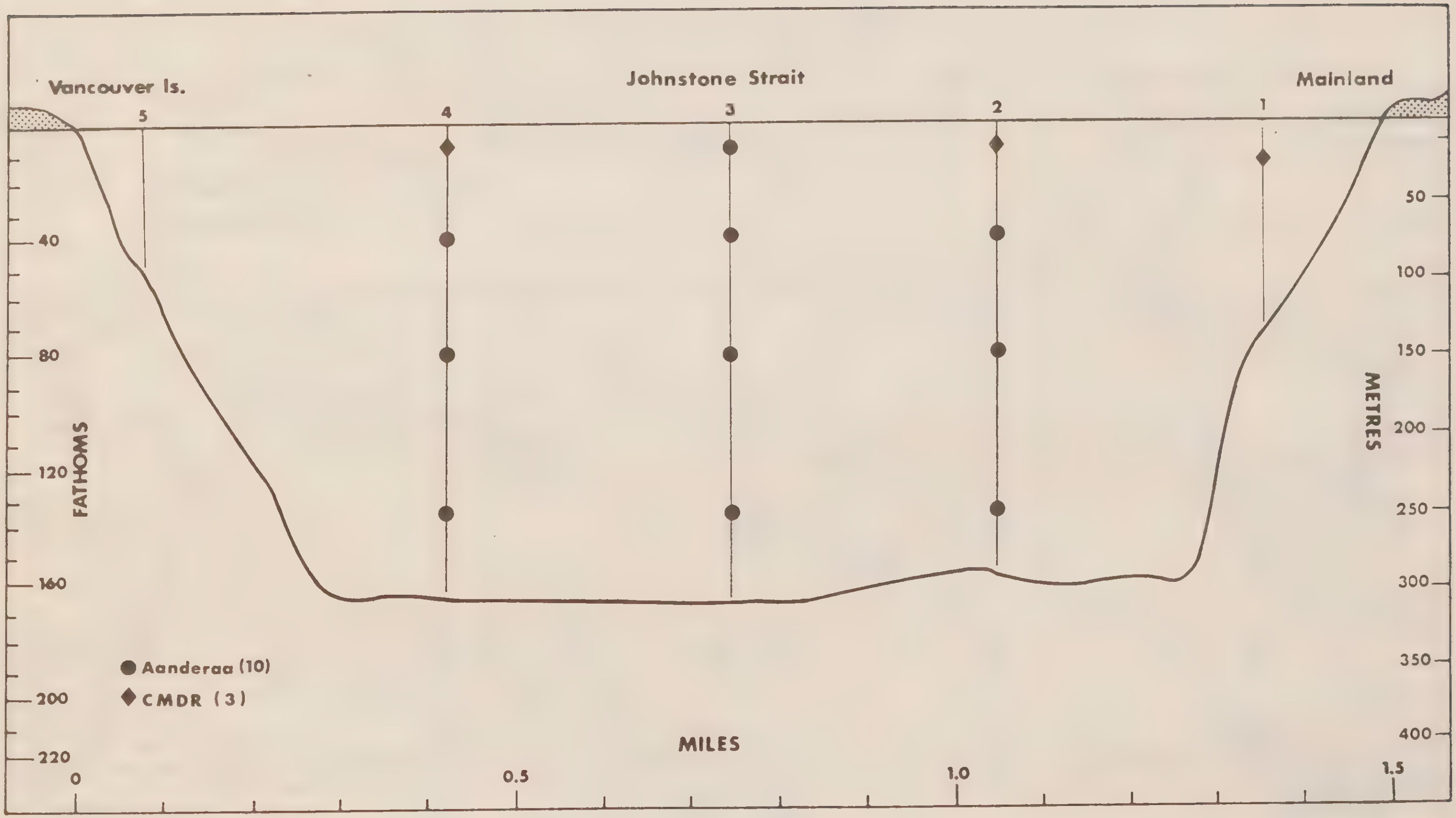


Figure 3: SECOND DEPLOYMENT
April 11, 1973 to June 11, 1973

ANCHORING SYSTEM USED IN JOHNSTONE STRAIT

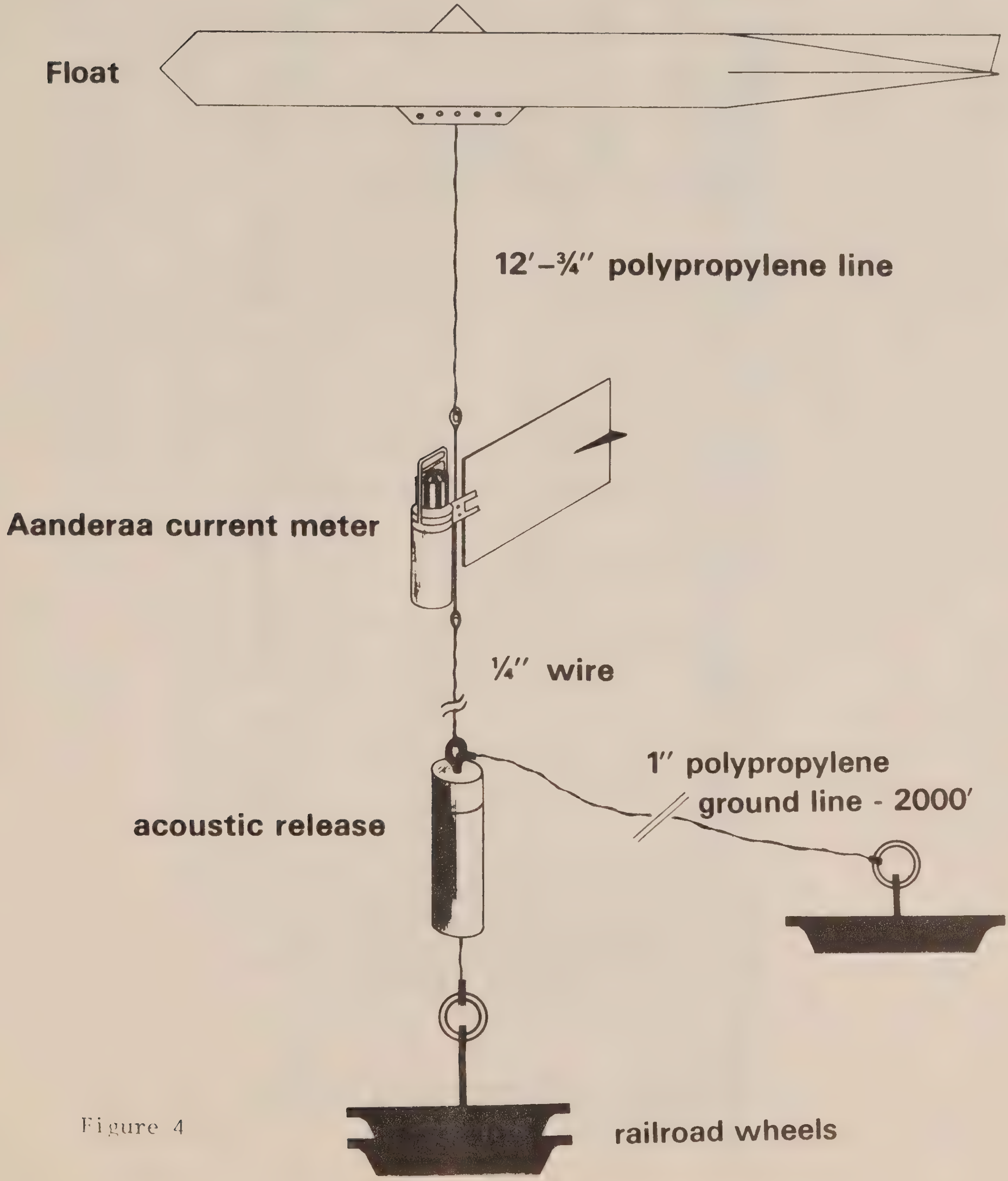


Figure 4

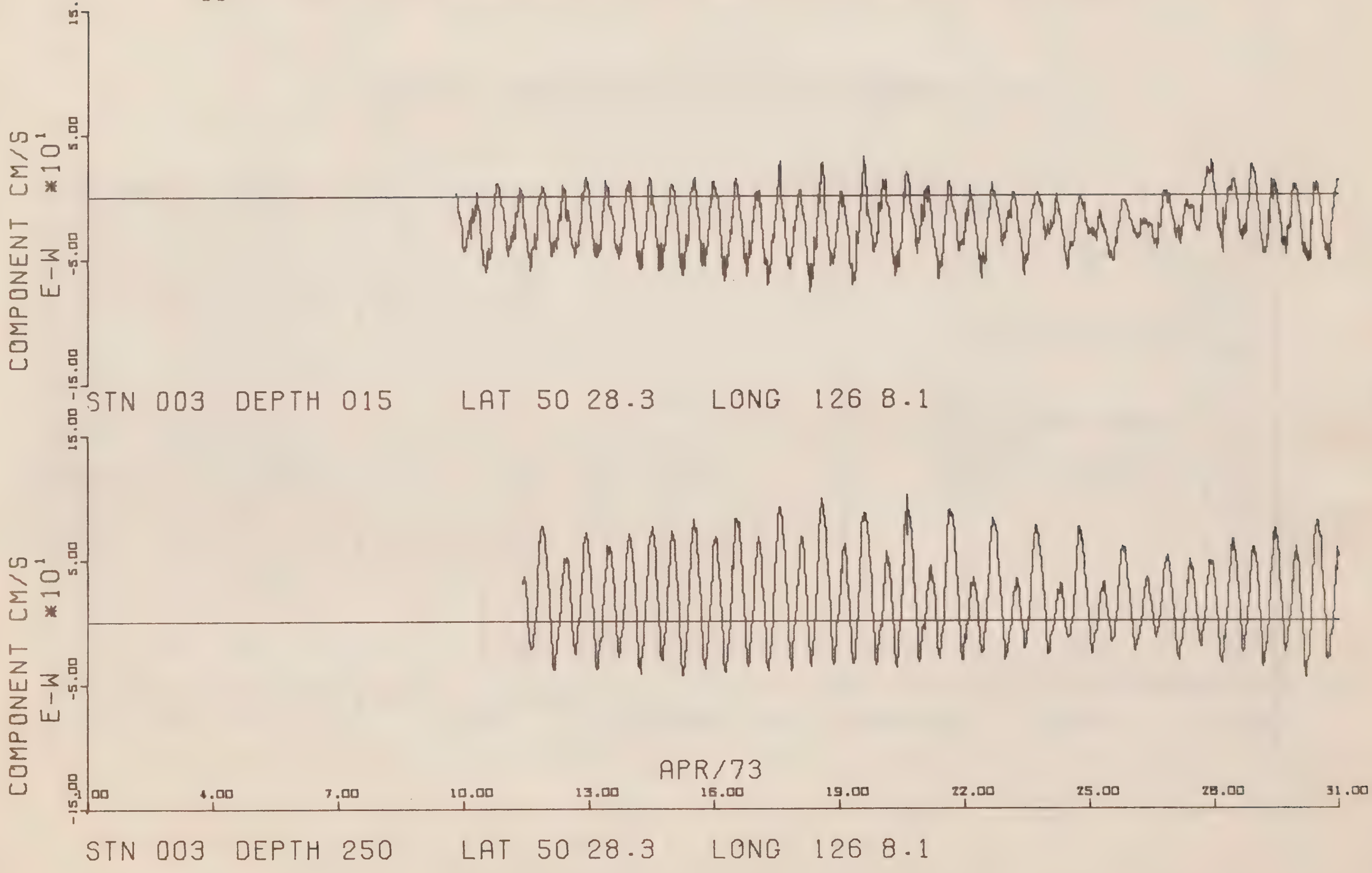
STATION	METER	DATE	NO. OF DAYS	CURRENT SPEED	DIRECTION	TEMPERATURE	PRESSURE	CONDUCTIVITY	REMARKS	PERCENT
001025	59	11/4/73	61	12	12					20
002015	53	20/2/73	49	49	49					100
002015	53	11/4/73	61	61	61					100
002150	58	20/2/73	49	33	33				Paper jammed in punch	67
002285	59	20/2/73	49	49	49					100
003150	56	20/2/73	49						No speeds	-
003310	57	20/2/73	49						No speeds	-
004015	55	20/2/73	48						No speeds after first day	-
004015	63	9/4/73	63						No speeds	-
004150	61	20/2/73	49	9	9				Array sank after 9 days	18
004310	62	20/2/73	49	9	9				Array sank after 9 days	18

Table 1: Performance of C.M.D.R. Meters

STATION	METER	DATE	NO. OF DAYS	CURRENT SPEED	CURRENT DIRECTION	TEMPERATURE	PRESSURE	CONDUCTIVITY	REMARKS	PERCENT
001050	362	21/2/73	48	19	19	19			Rotor broken off	40
001120	98	21/2/73	48	48	48	48				100
002075	430	20/2/73	49	48	48	48				98
002075	430	11/4/73	62	62	62	62				100
002150	362	11/4/73	62	62	62	62				100
002225	431	20/2/73	49	49	49	49				100
002250	431	11/4/73	62	26	26	26				42
003015	315	20/2/73	48	48	48	48				100
003015	315	9/4/73	64	64	64	64				100
003075	644	20/2/73	49	49	49	49		49		100
003075	734	11/4/73	61						Low voltage - tape N.G.	-
003150	733	11/4/73	61	61	61	61	61			100
003225	643	20/2/73	49	49	49	49		49		100
003250	732	11/4/73	61	61	61	61	61			100
004075	359	20/2/73	49	9	9	9			Array sank after 9 days	18
004075	359	11/4/73	61	61	61	61				100
004150	735	11/4/73	61	61	61	61	61			100
004225	432	20/2/73	49	9	9	9			Array sank after 9 days	18
004250	432	11/4/73	61	61	61	61				100
005015	101	21/2/73							Lost	-
005120	102	21/2/73							Lost	-

Table 2: Performance of Aanderaa Current Meters

Typical up-strait components of currents at 15 metre & 250 metre depths.



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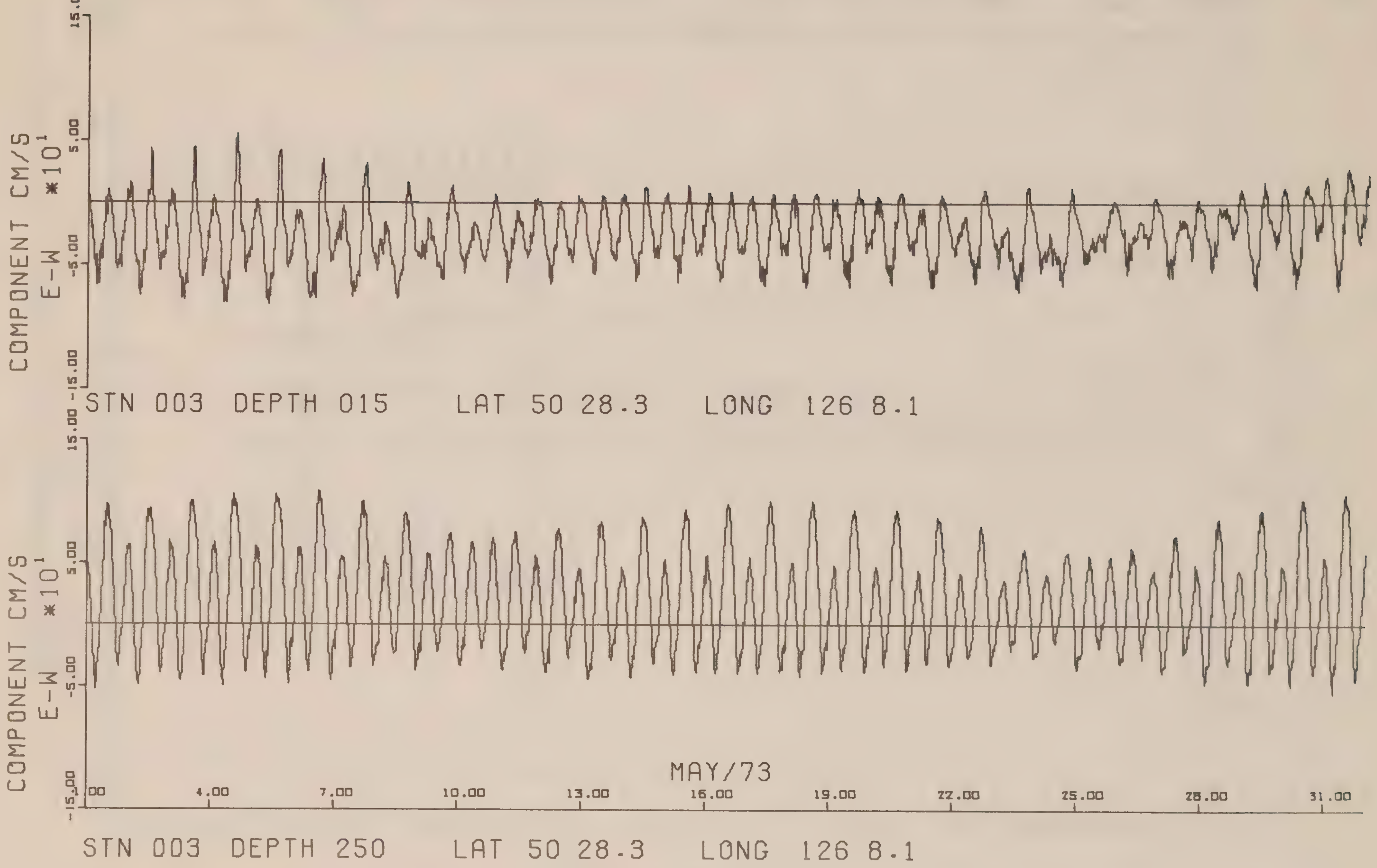

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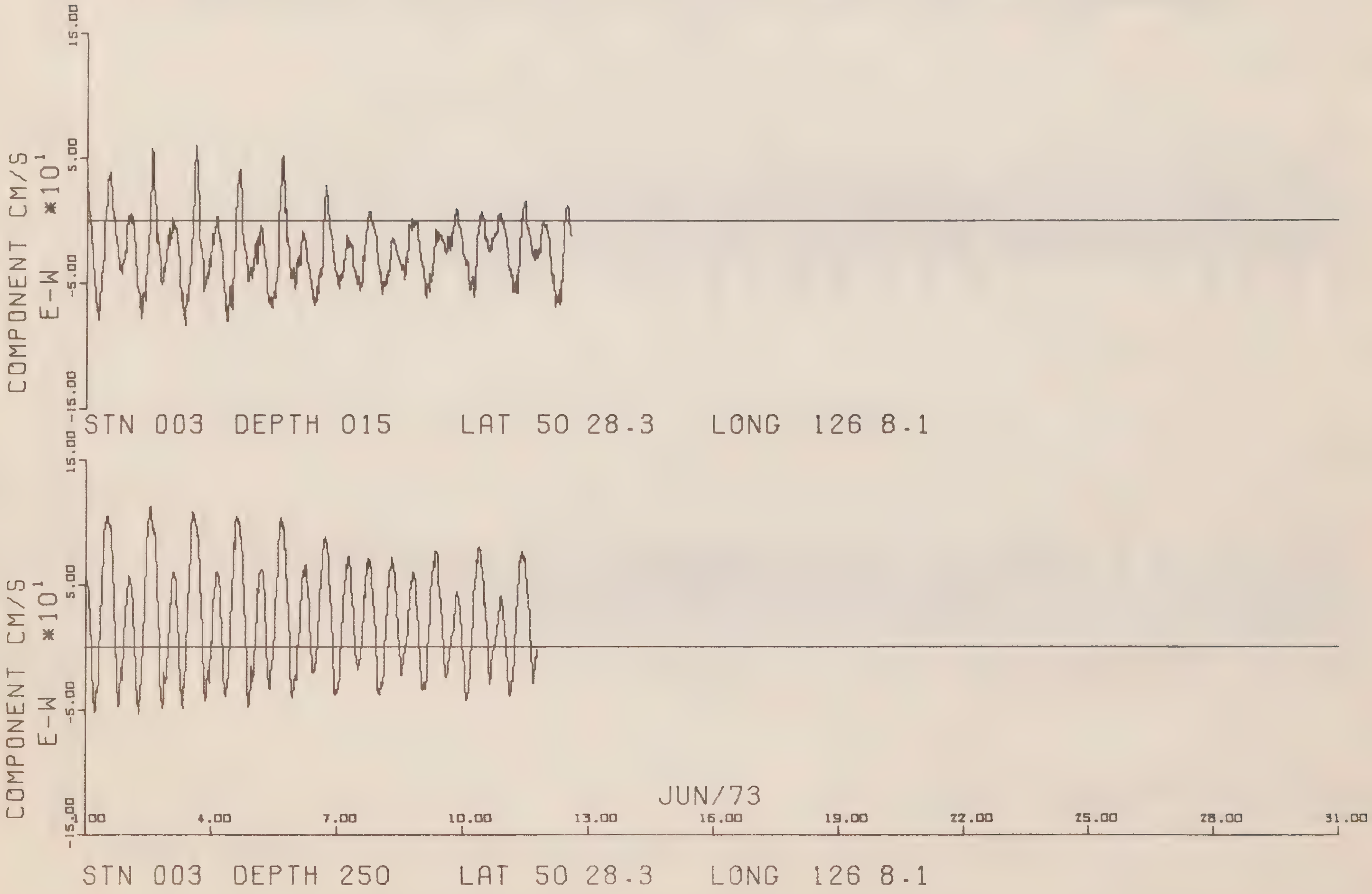

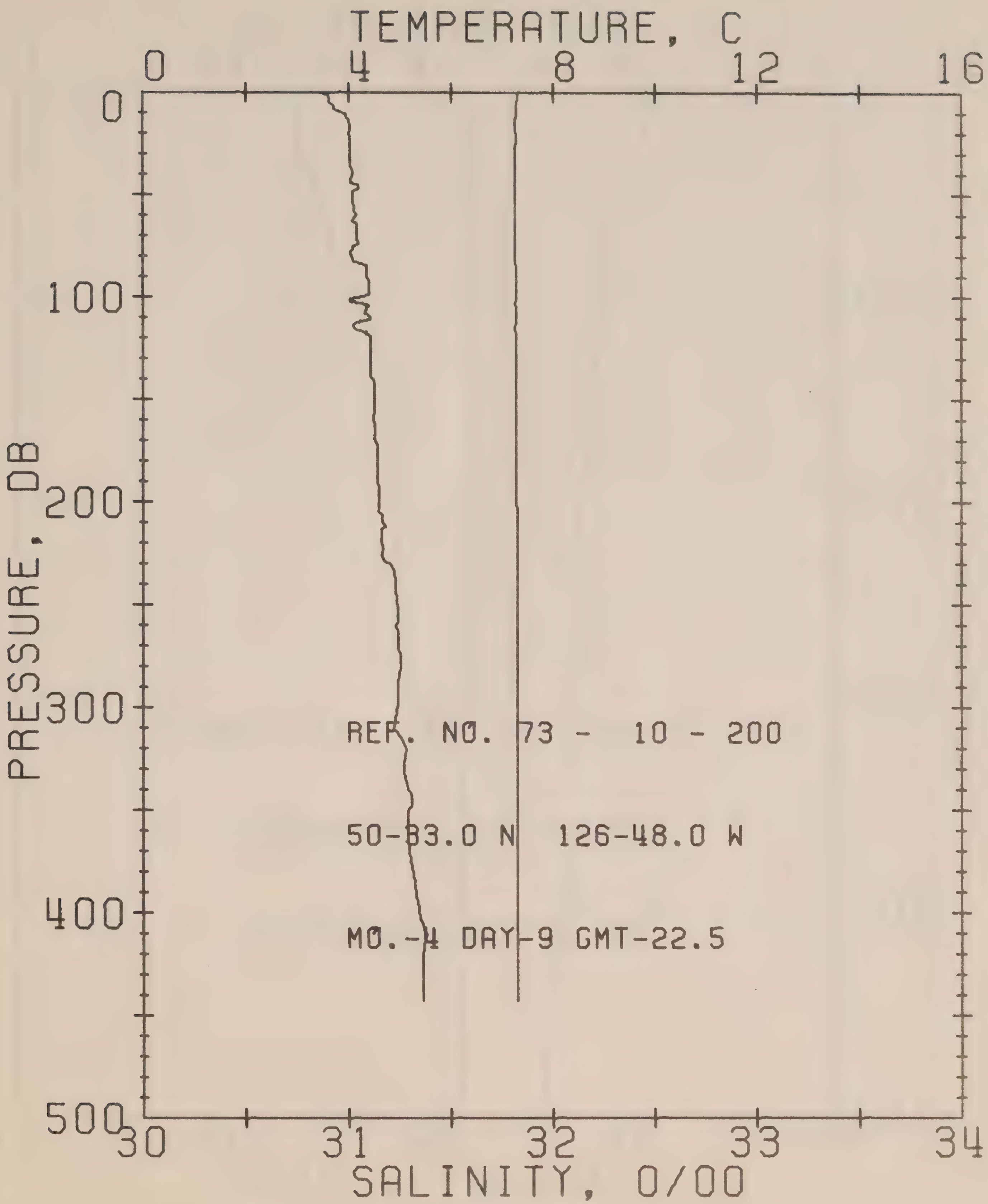
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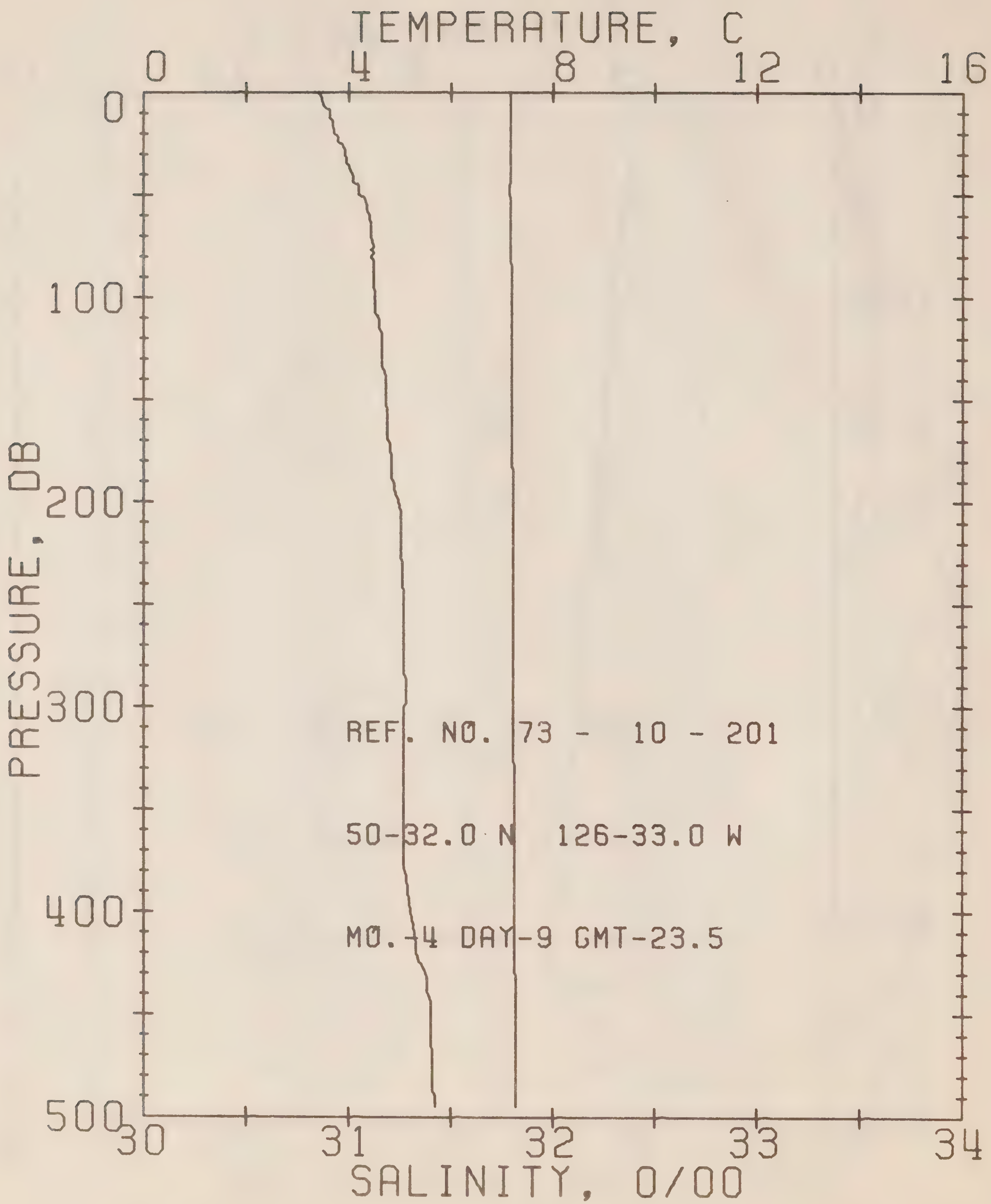
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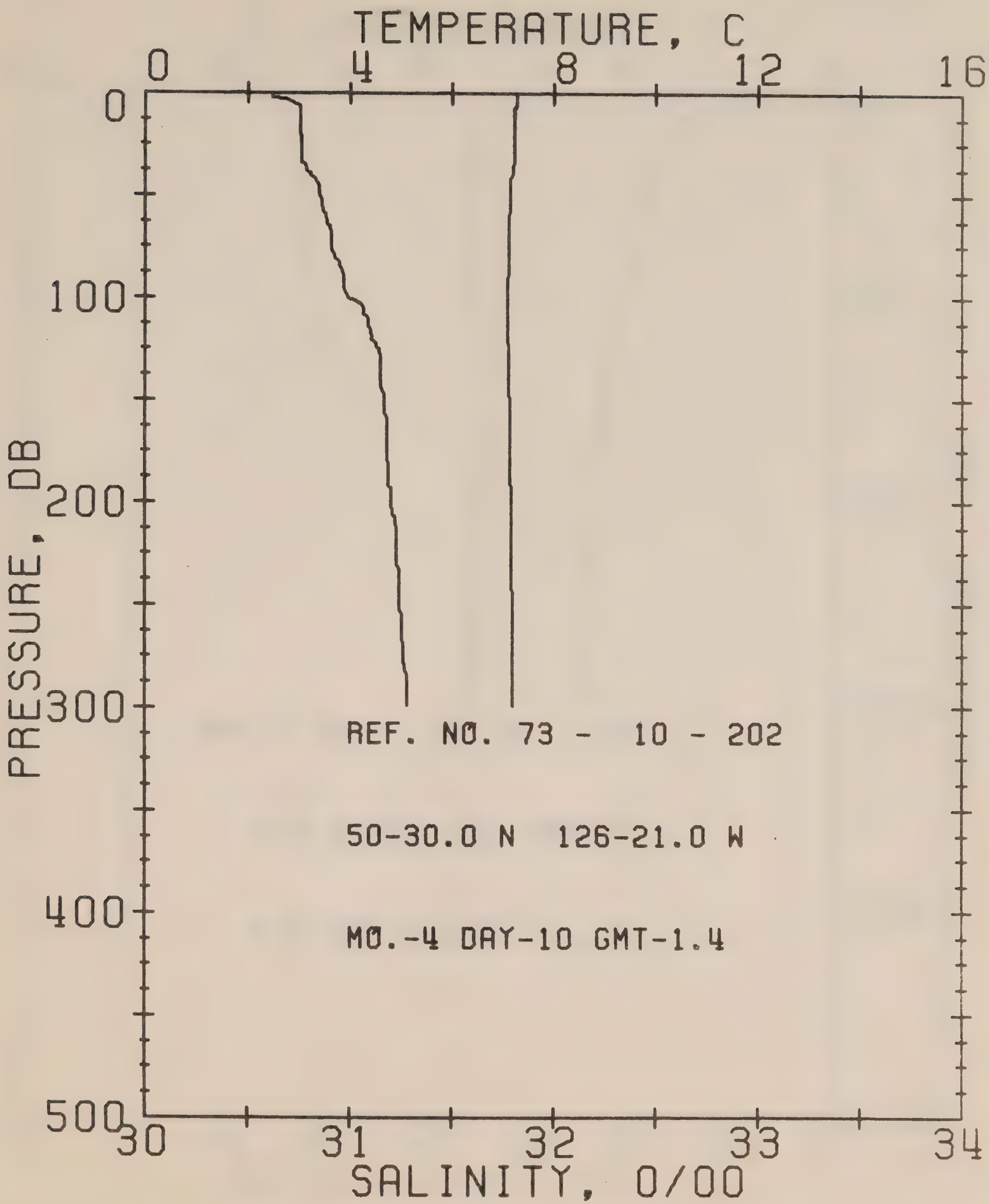
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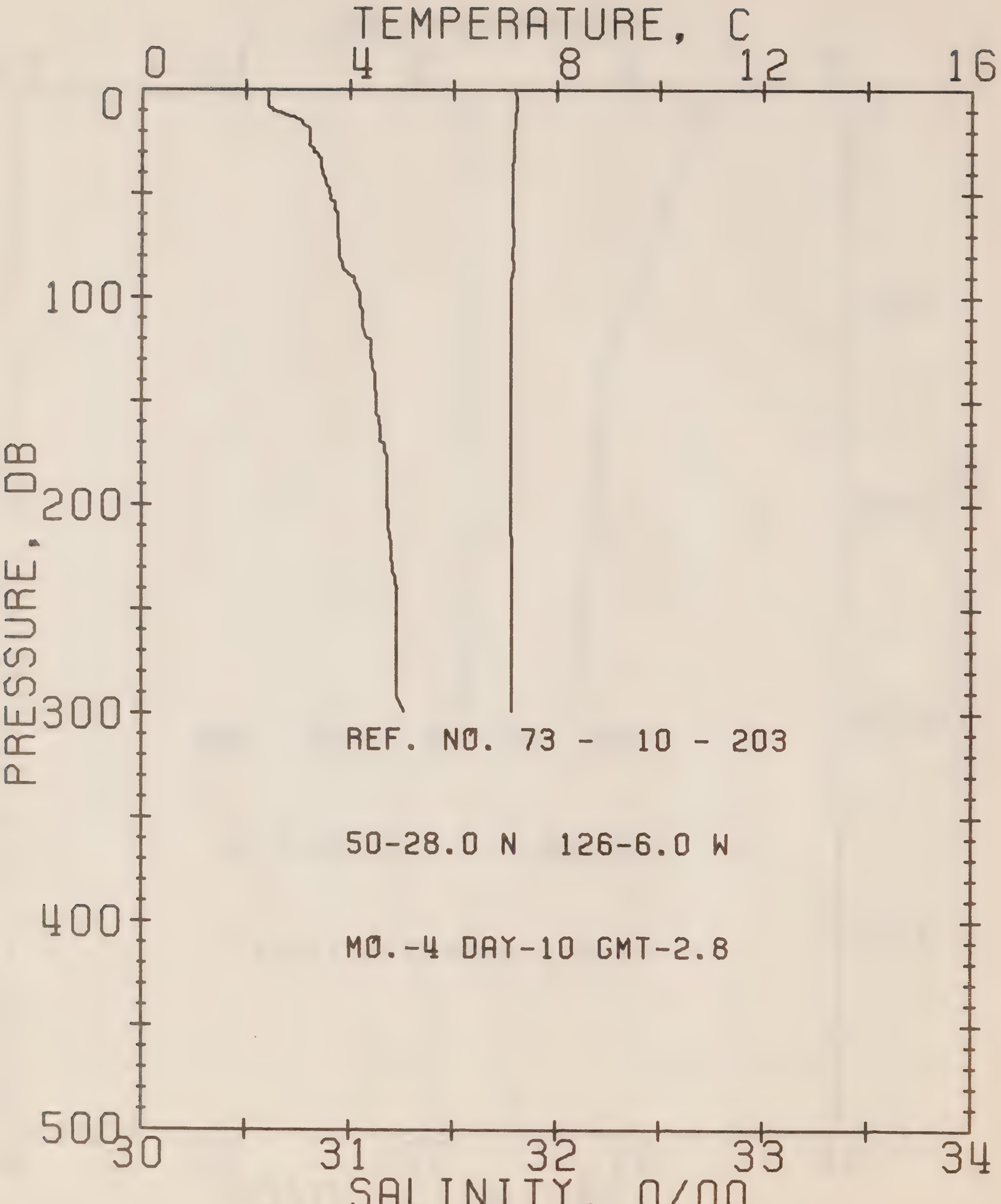
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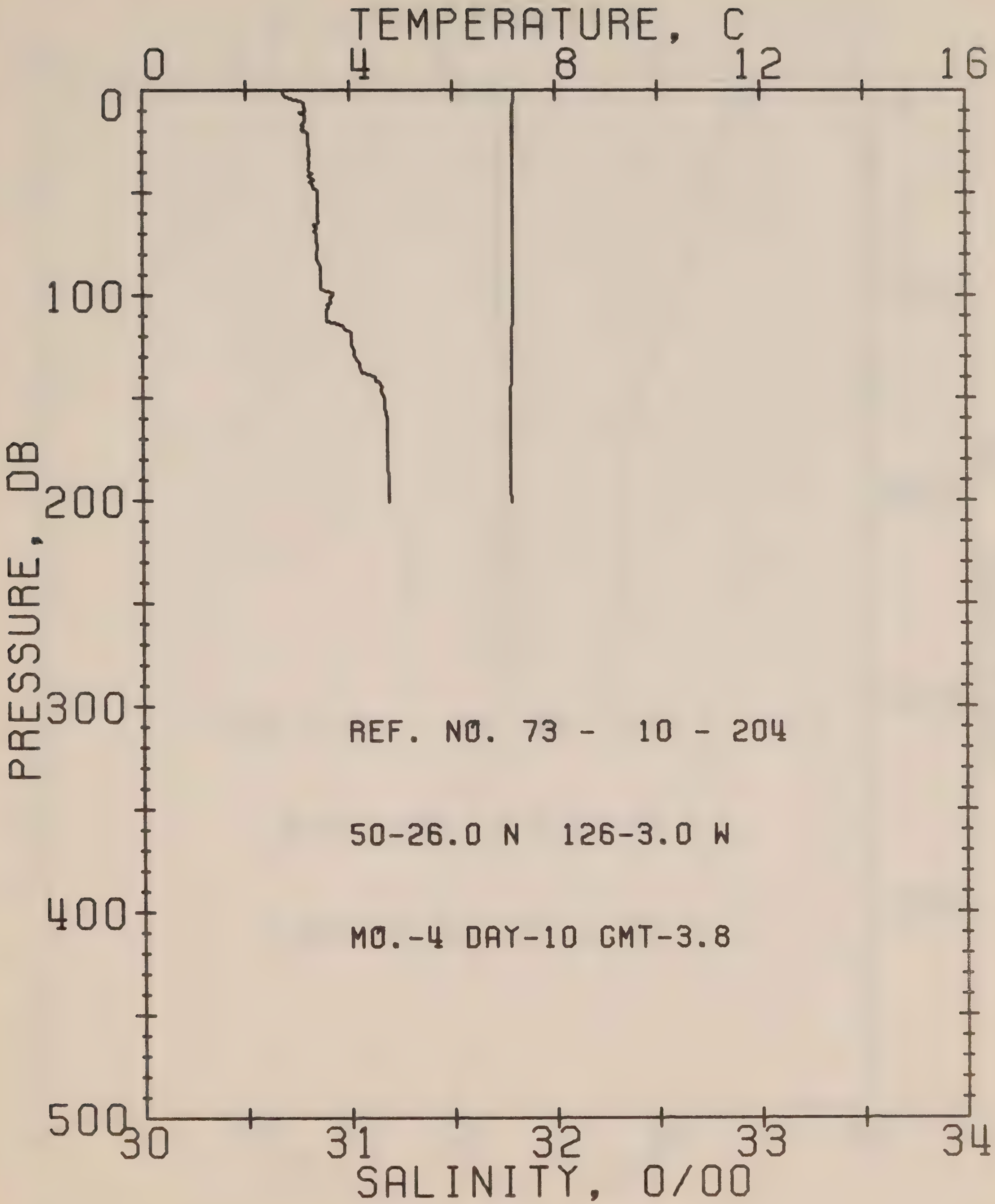

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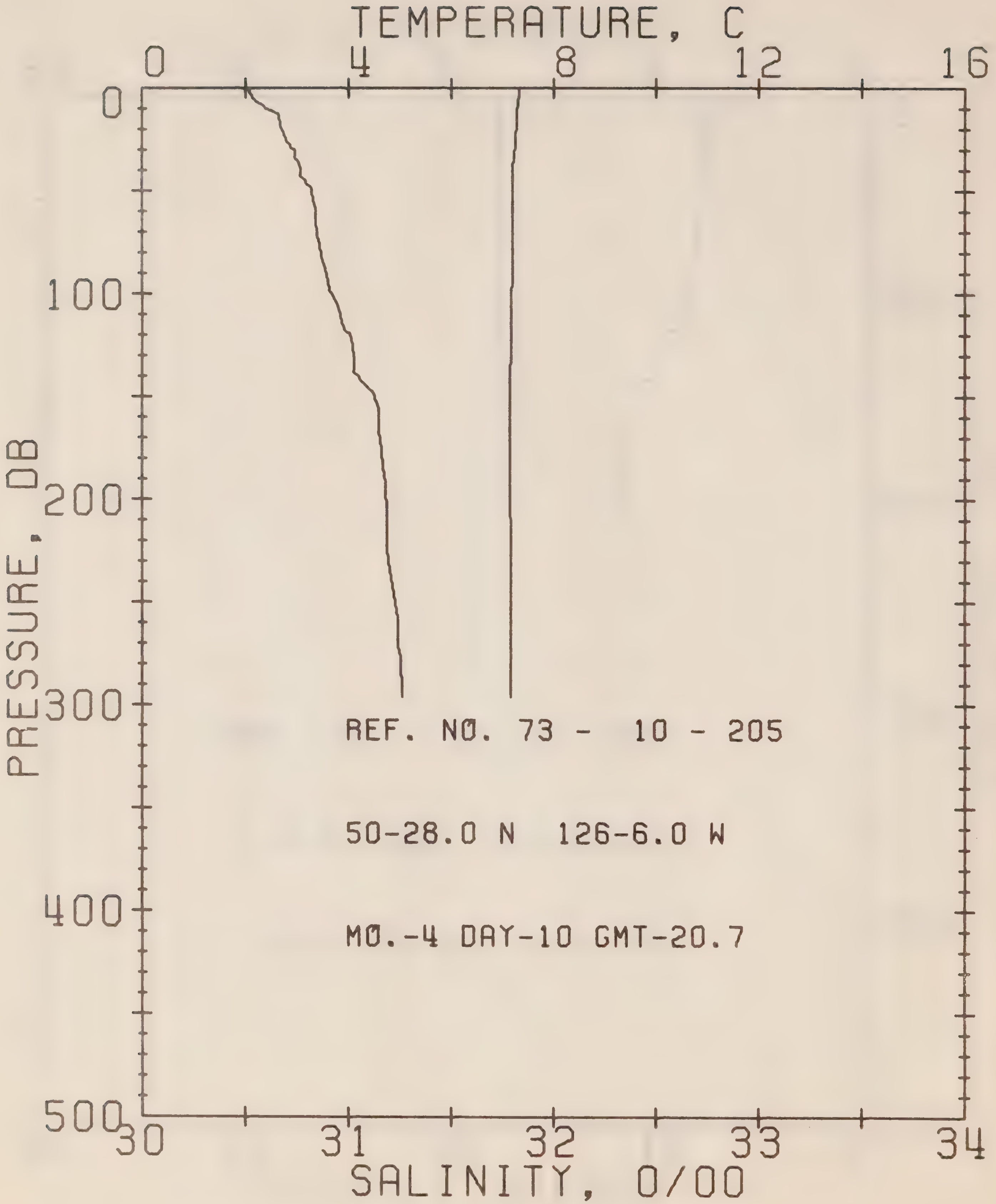
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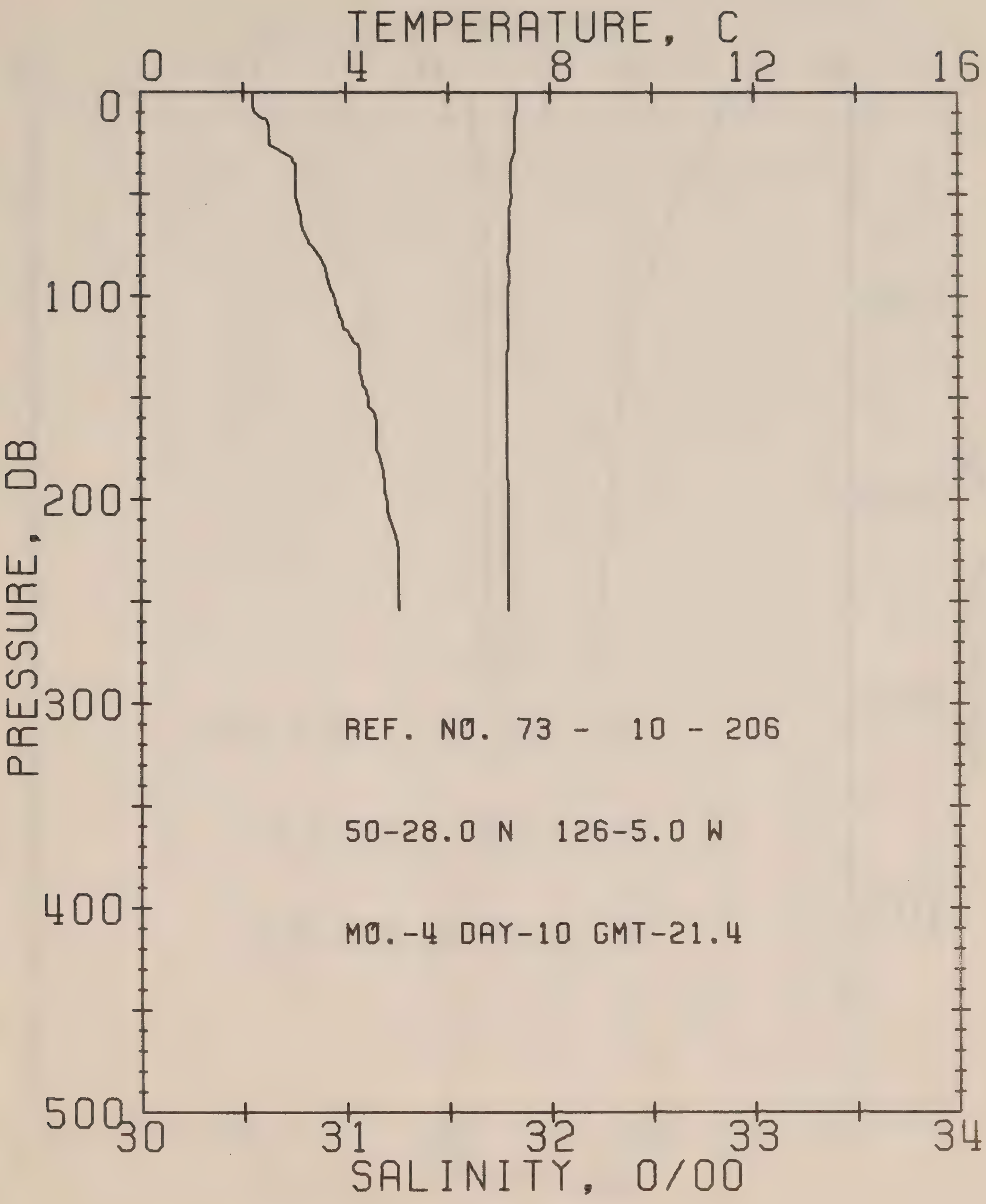
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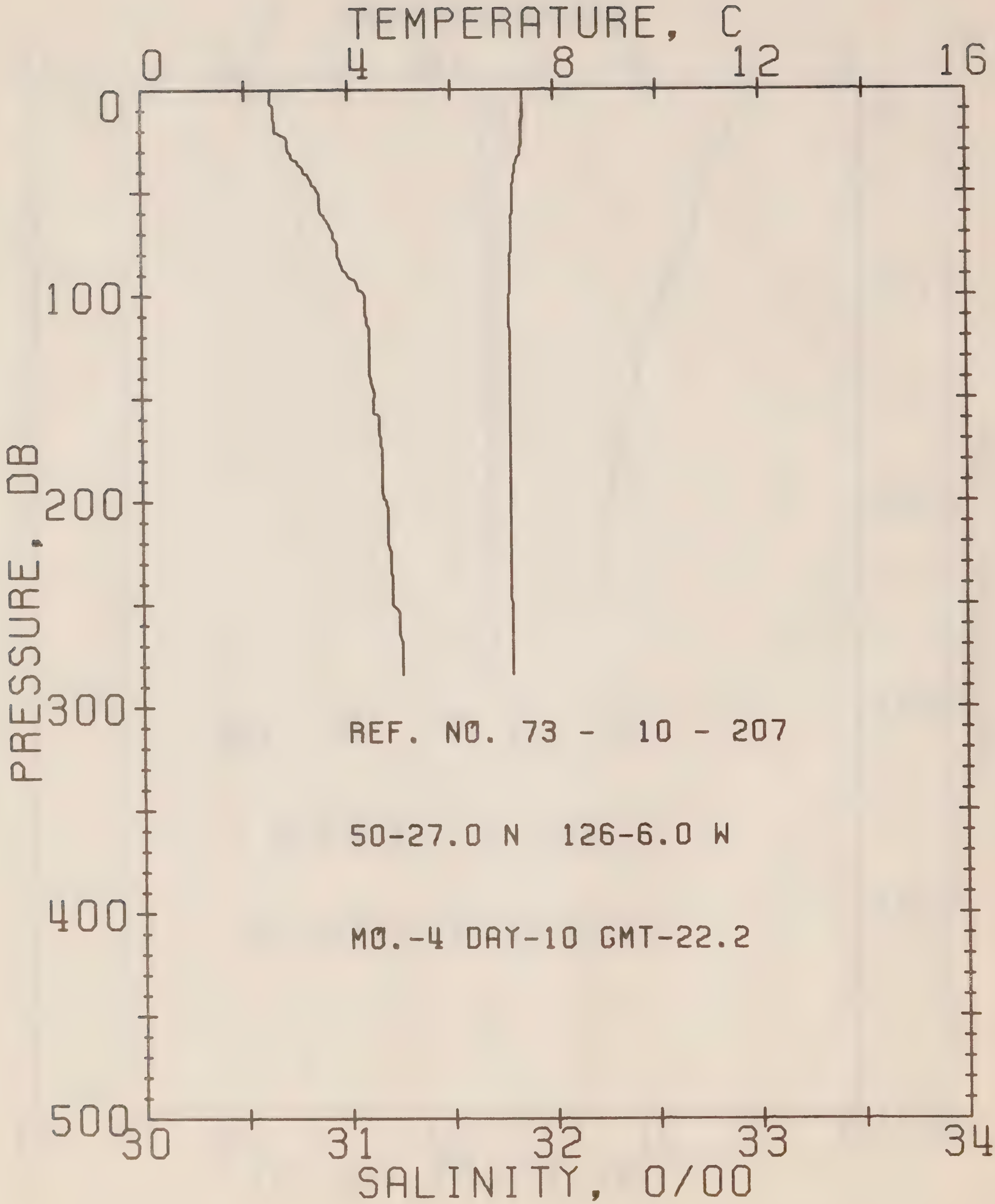
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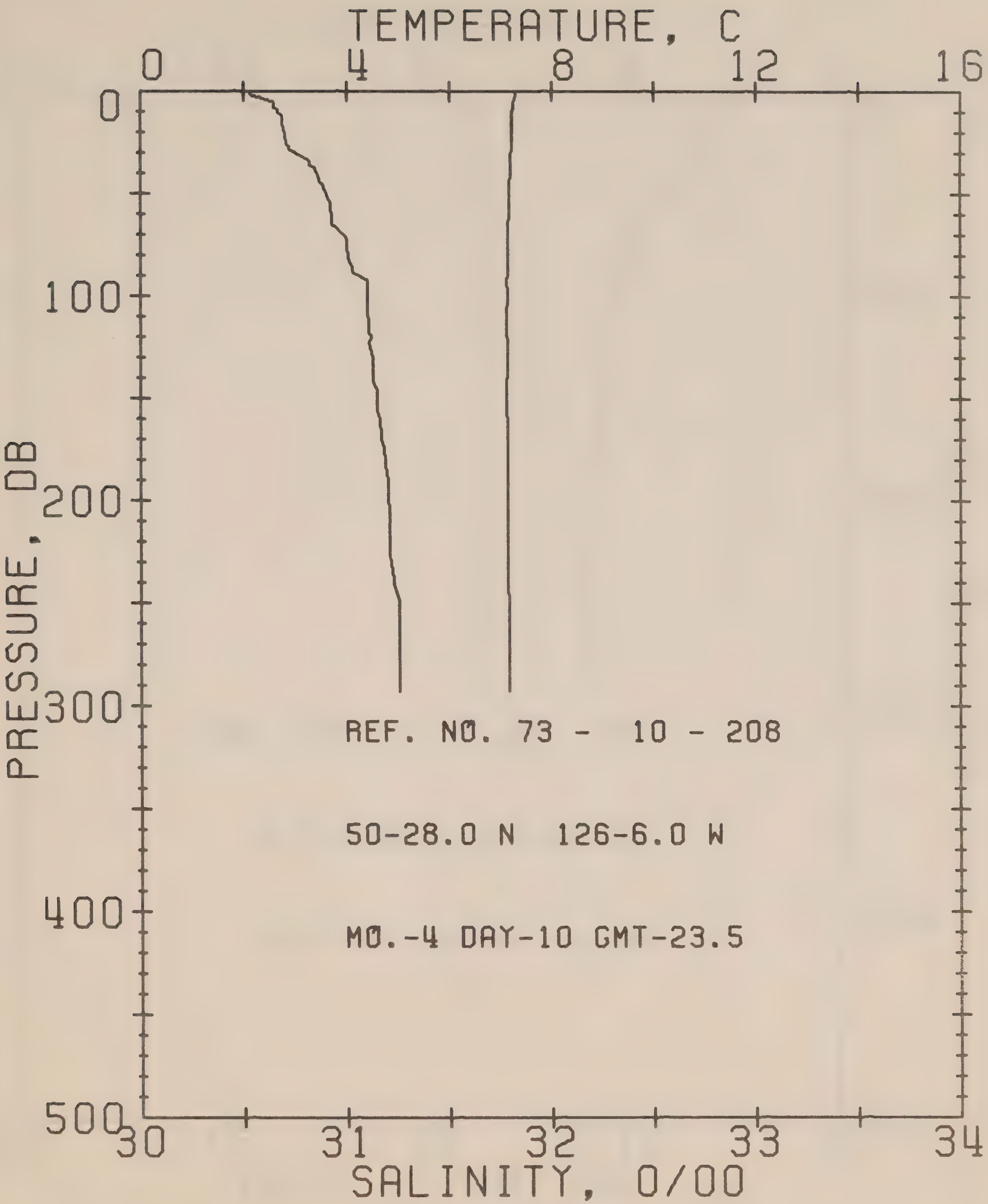
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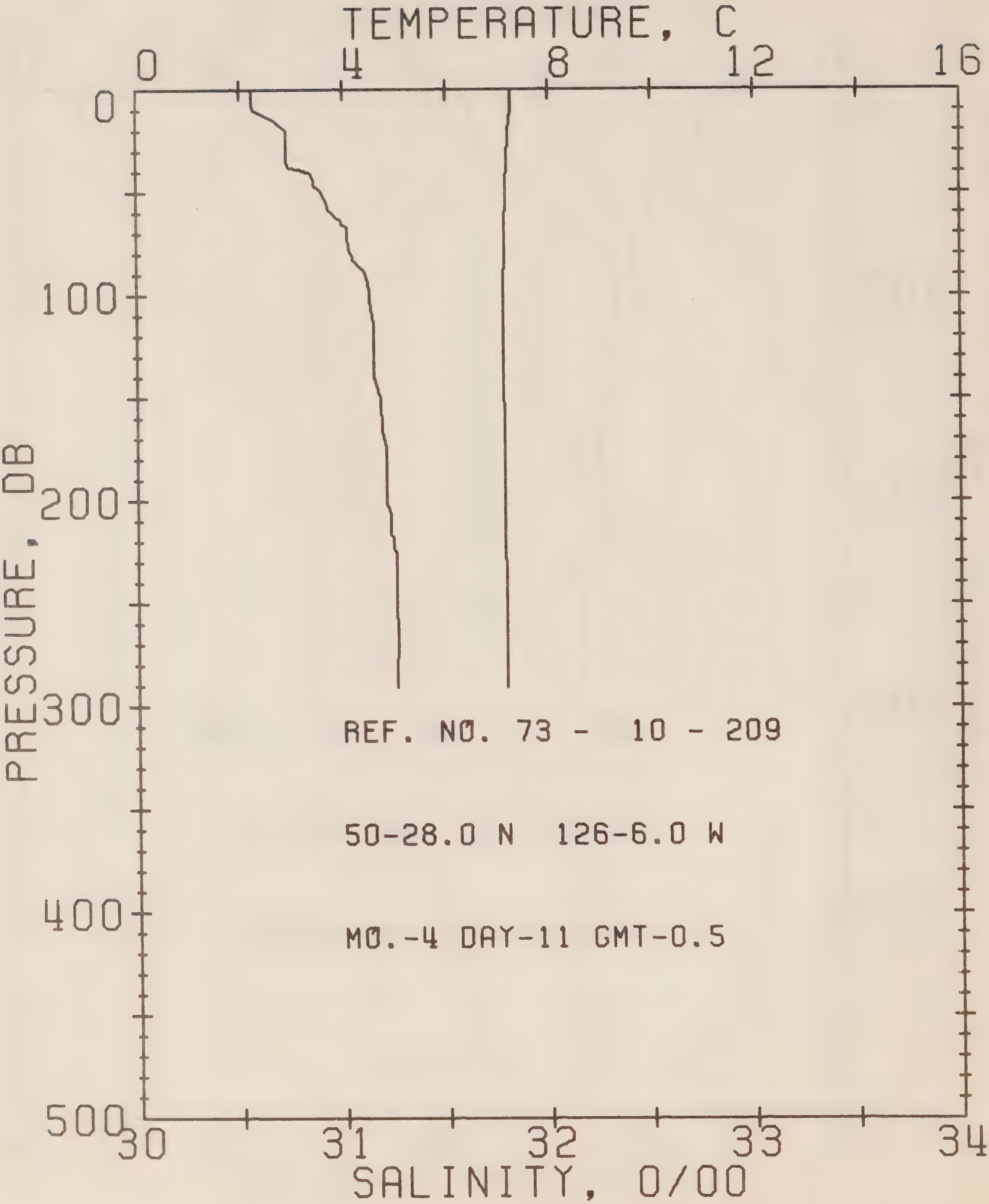
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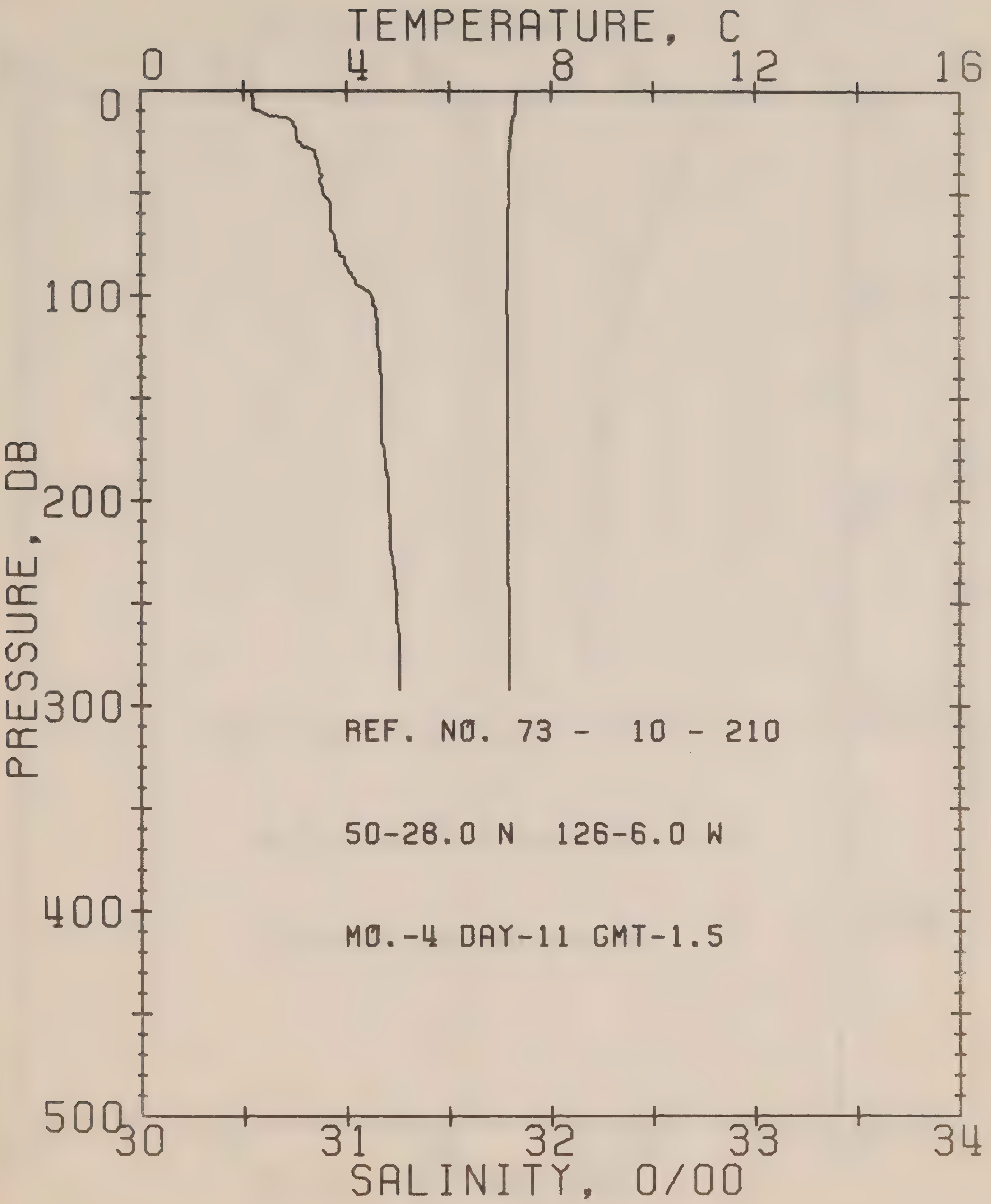
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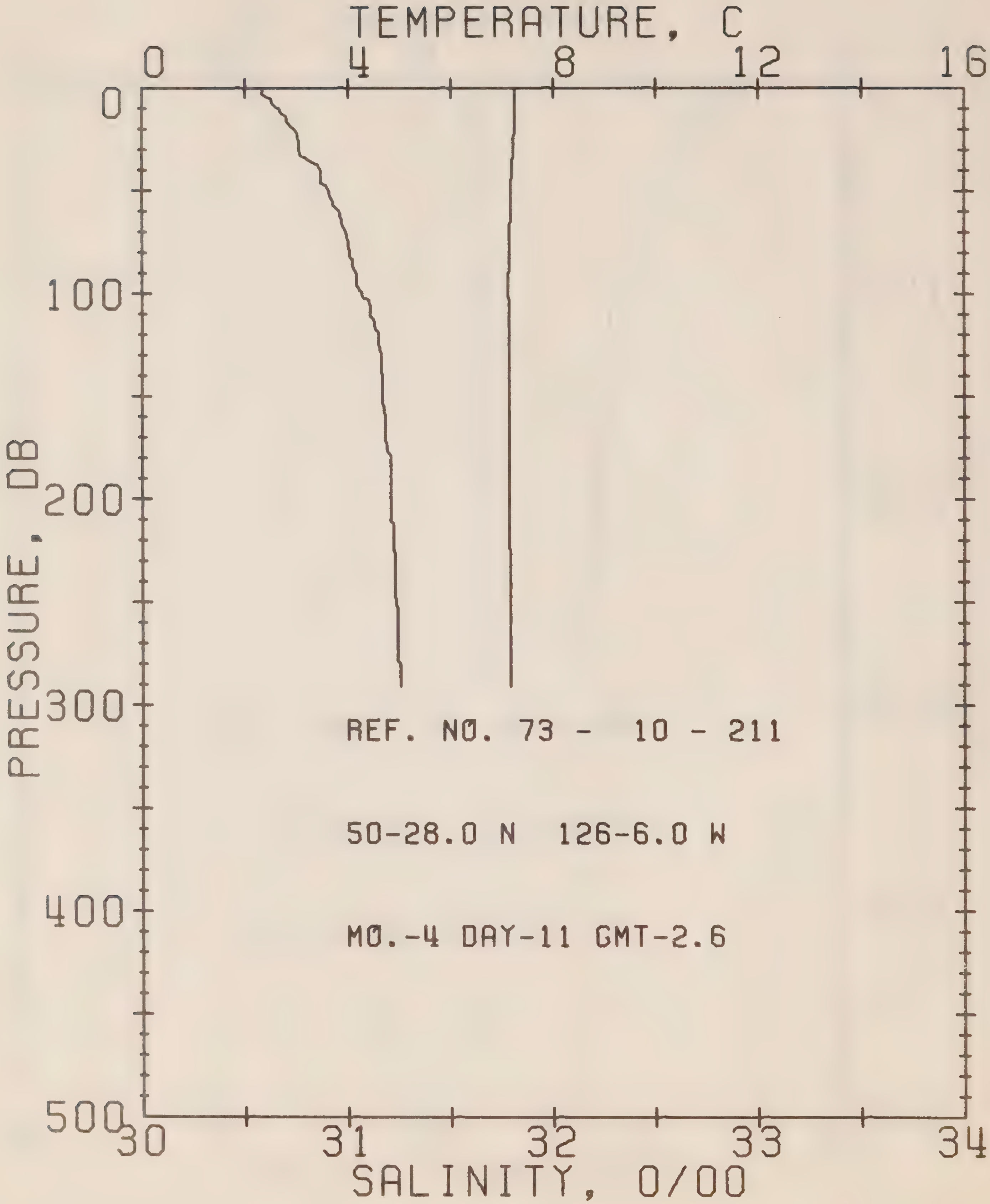
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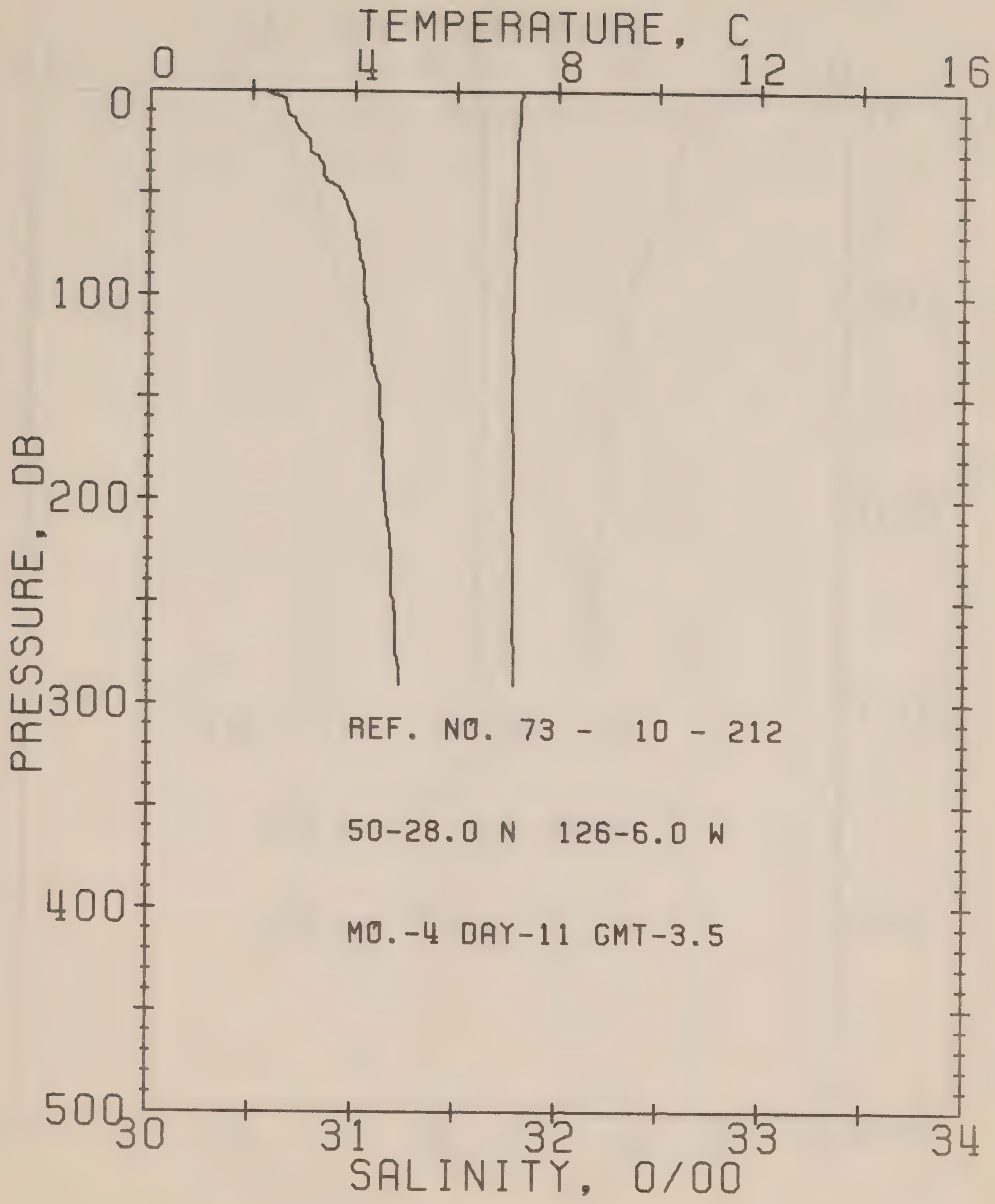
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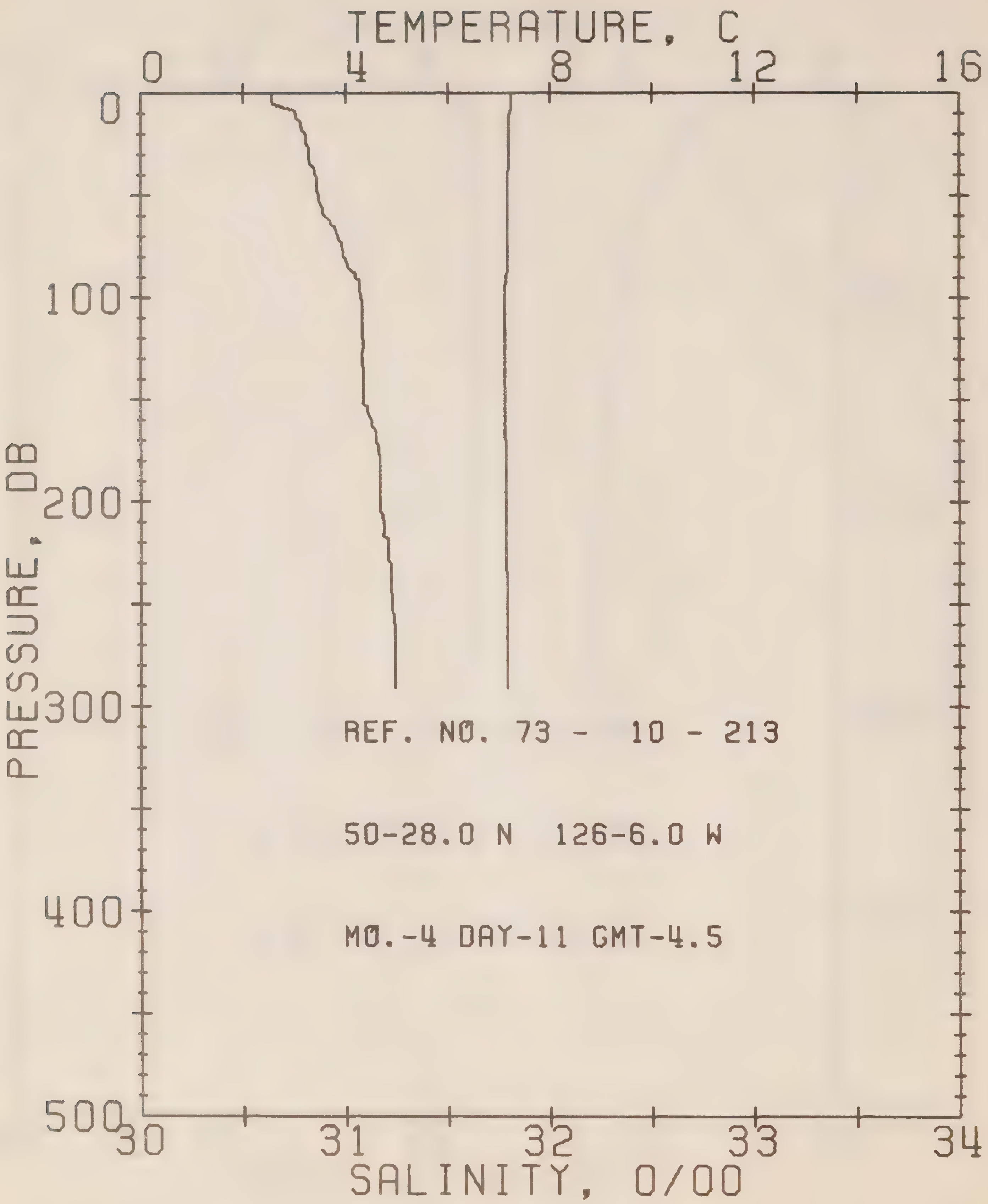

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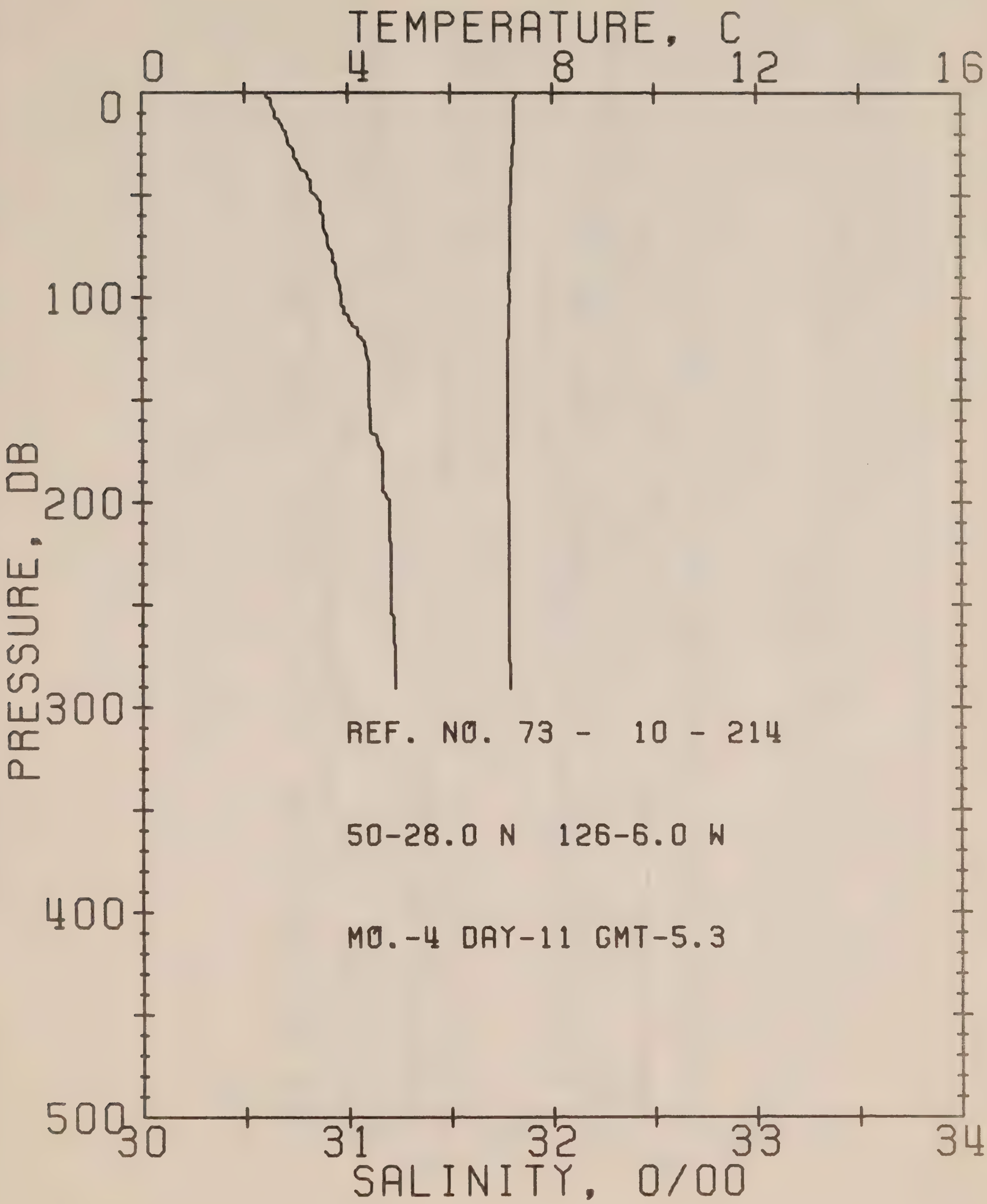
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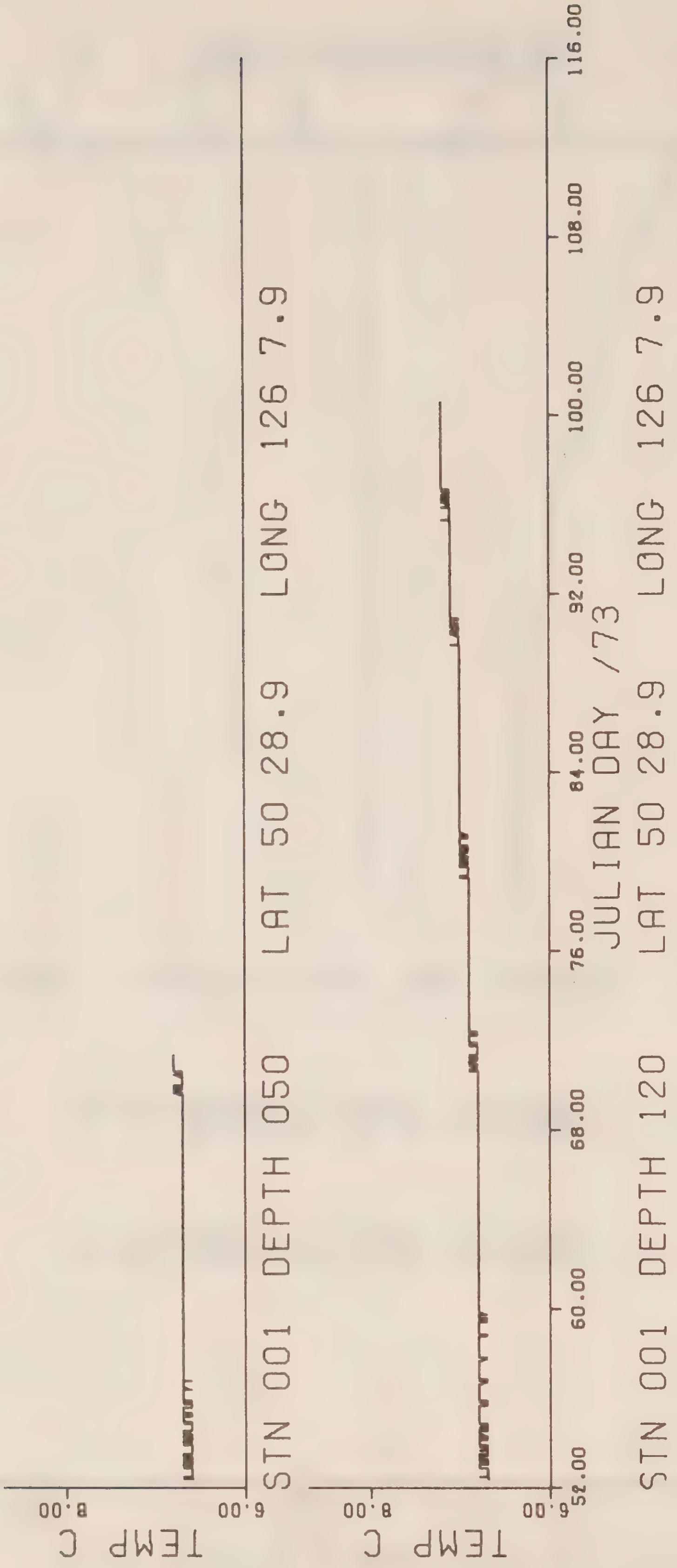
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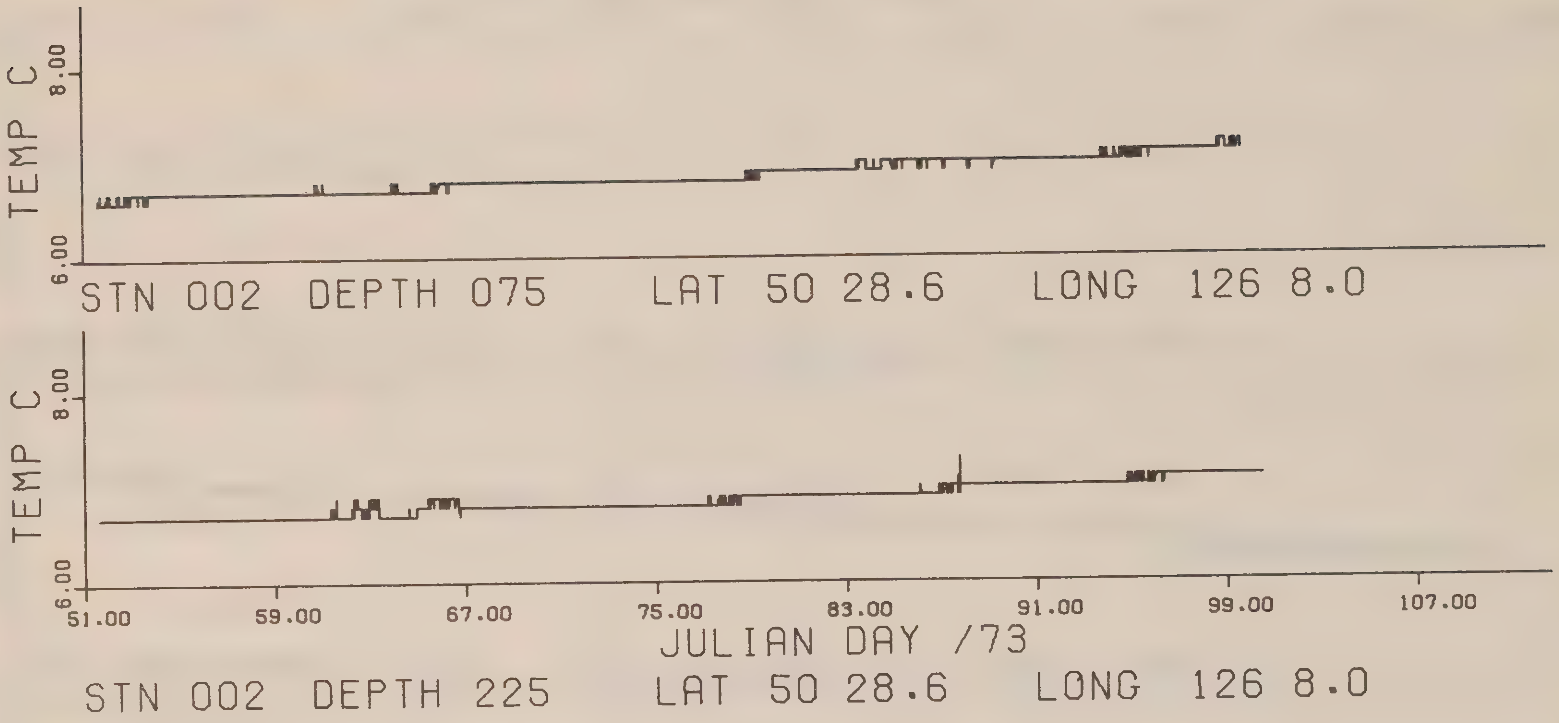
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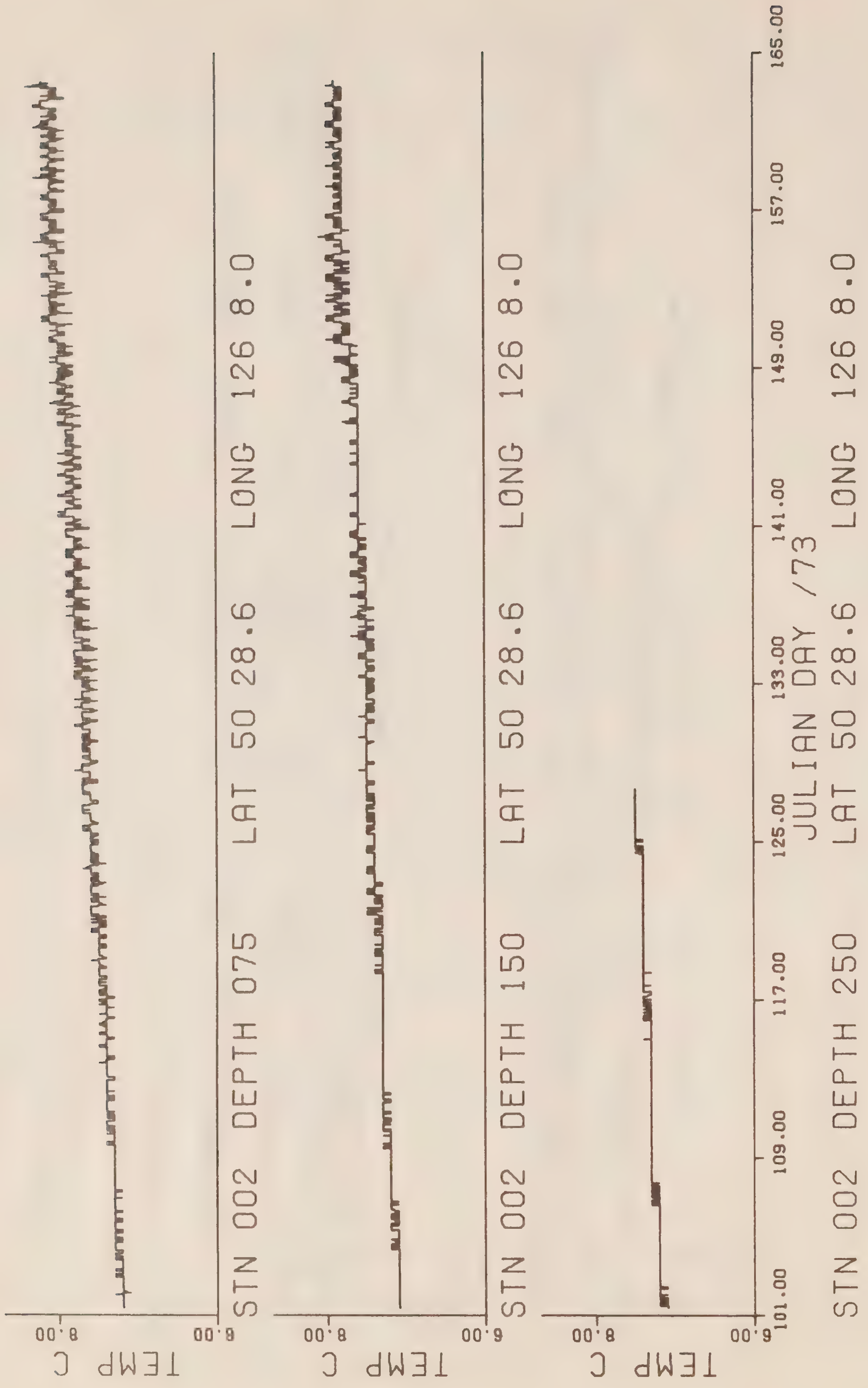
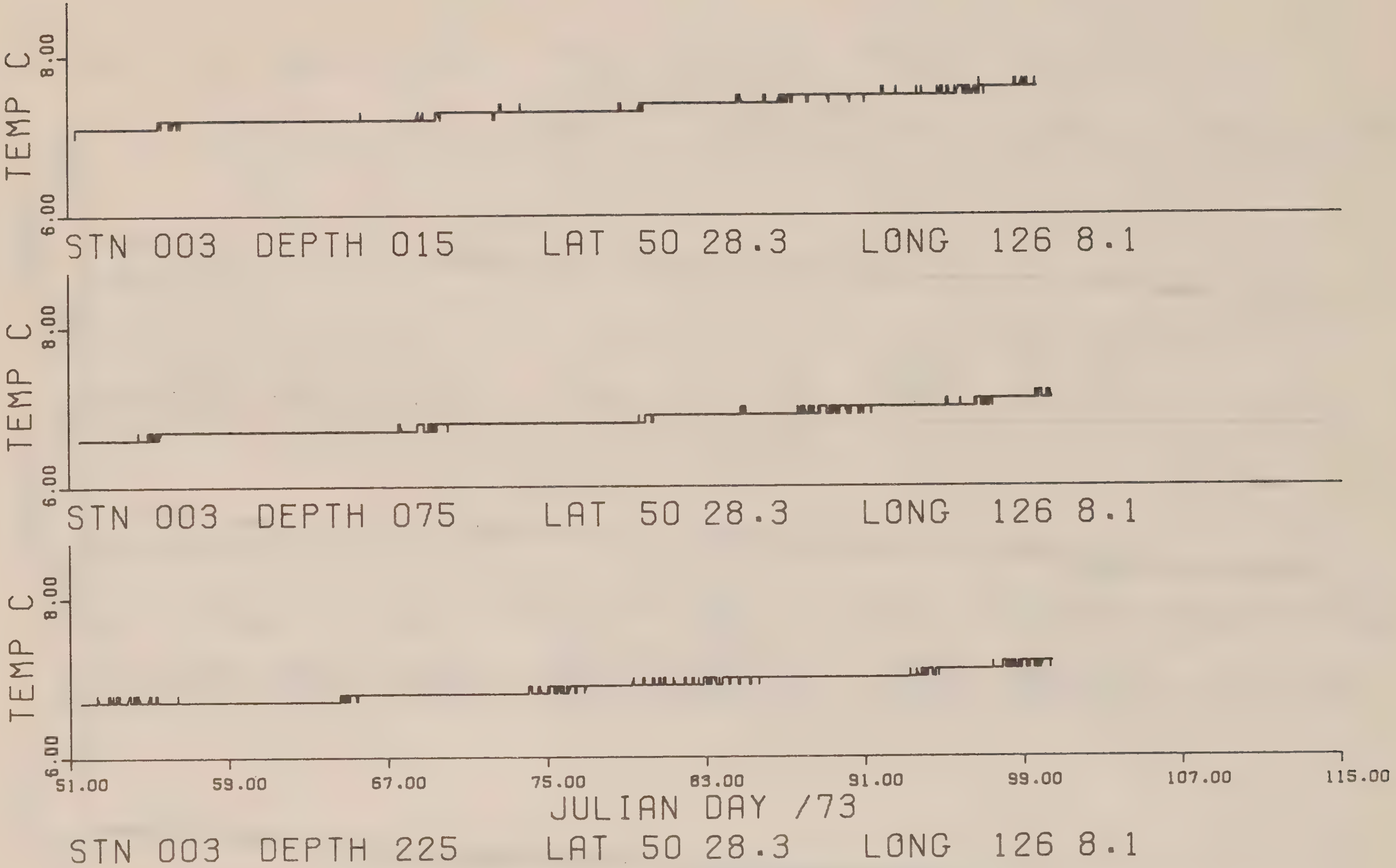
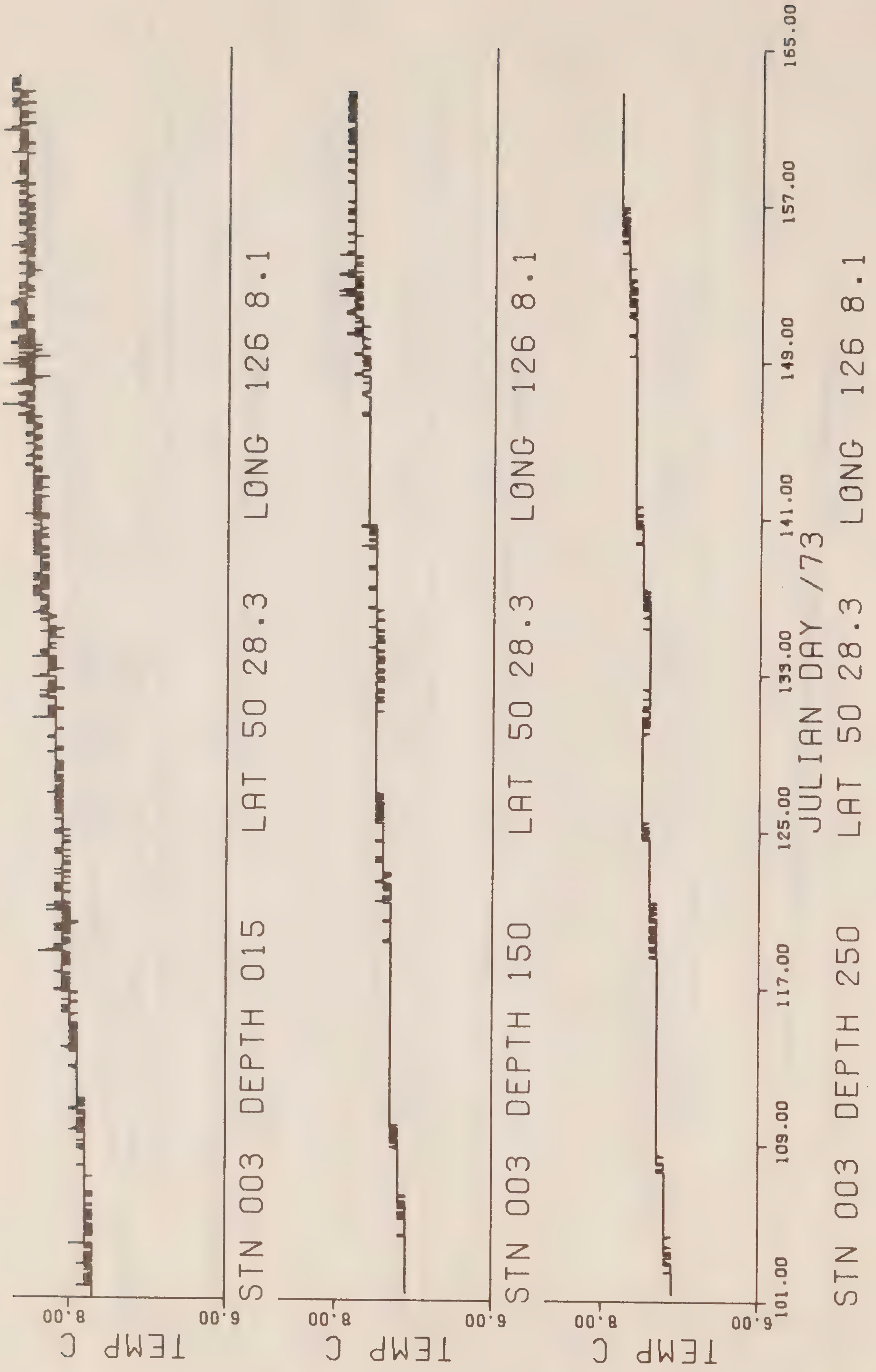
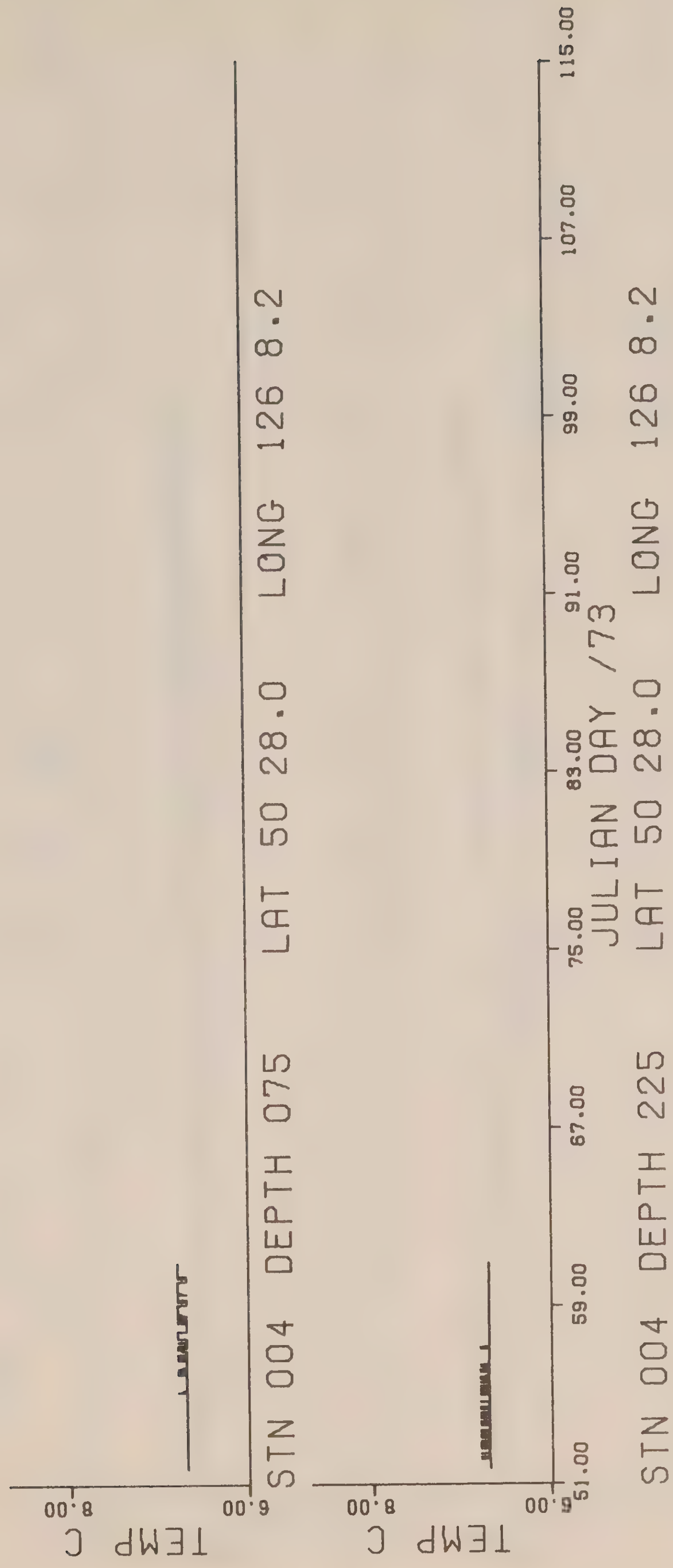
6.00
STN 002 DEPTH 075 LAT 50 28.6 LONG 126 8.0
TEMP C
8.00
6.00
51.00
59.00
67.00
75.00
83.00
91.00
99.00
107.00
JULIAN DAY /73
STN 002 DEPTH 225 LAT 50 28.6 LONG 126 8.0

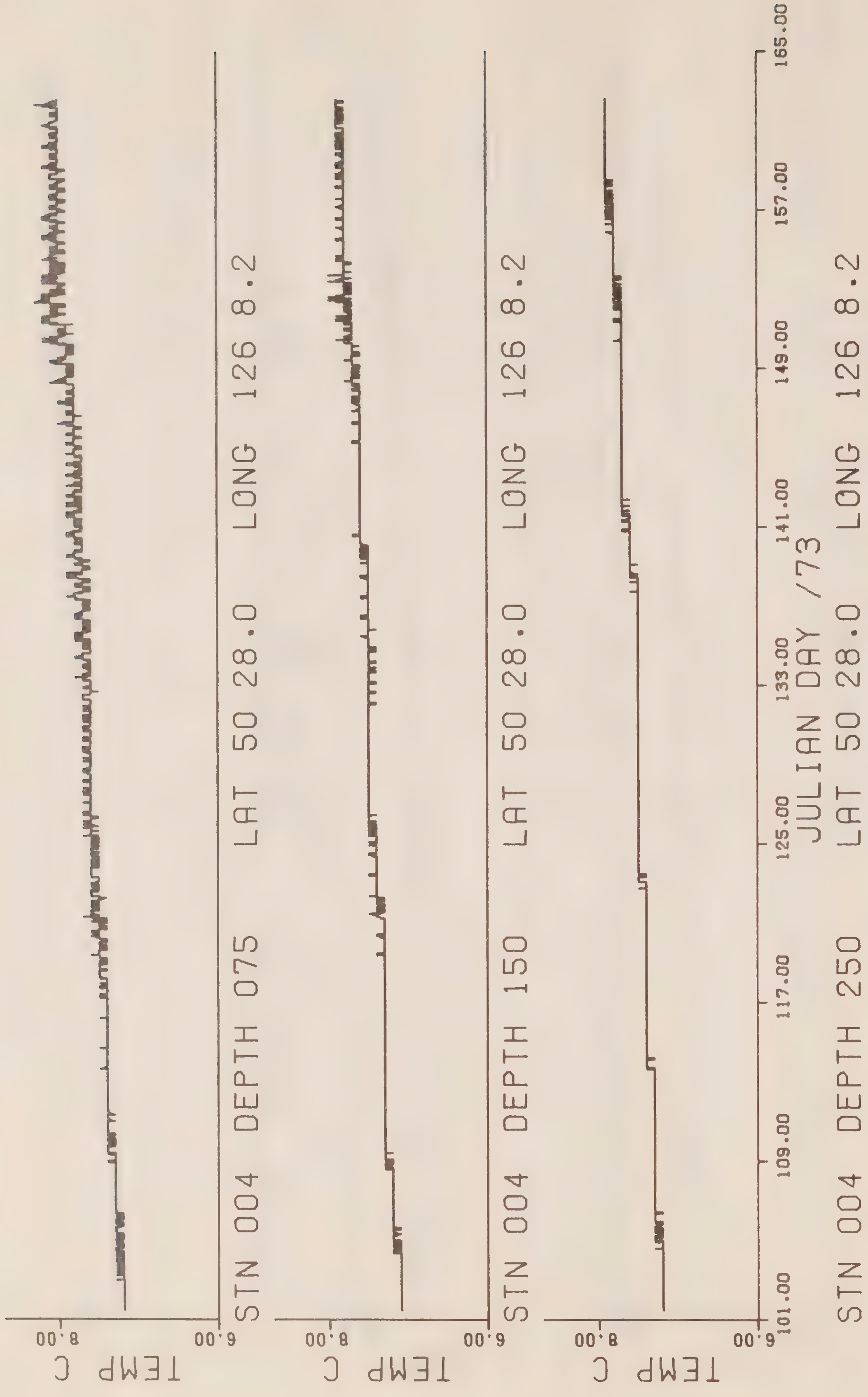


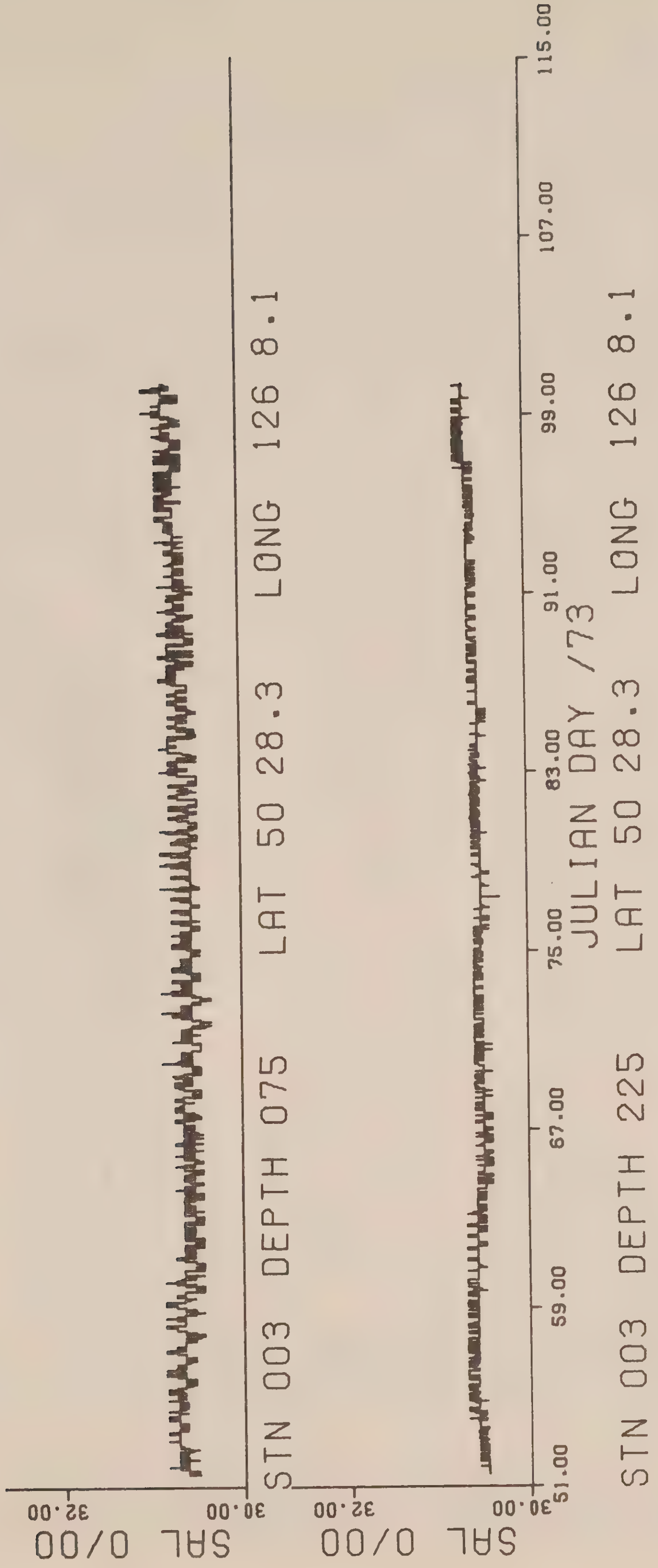
STN 002 DEPTH 075 LAT 50 28.6 LONG 126 8.0
TEMP C
8.00
6.00
STN 002 DEPTH 150 LAT 50 28.6 LONG 126 8.0
TEMP C
8.00
6.00
STN 002 DEPTH 250 LAT 50 28.6 LONG 126 8.0
TEMP C
8.00
6.00
101.00
109.00
117.00
125.00
133.00
141.00
149.00
157.00
165.00
JULIAN DAY /73


TEMP C
8.00
6.00
STN 003 DEPTH 015 LAT 50 28.3 LONG 126 8.1
TEMP C
8.00
6.00
STN 003 DEPTH 075 LAT 50 28.3 LONG 126 8.1
TEMP C
8.00
6.00
51.00
59.00
67.00
75.00
83.00
91.00
99.00
107.00
115.00
JULIAN DAY /73
STN 003 DEPTH 225 LAT 50 28.3 LONG 126 8.1


TEMP C
8.00
6.00
STN 003 DEPTH 015 LAT 50 28.3 LONG 126 8.1
TEMP C
8.00
6.00
STN 003 DEPTH 150 LAT 50 28.3 LONG 126 8.1
TEMP C
8.00
6.00
101.00
109.00
117.00
125.00
133.00
141.00
149.00
157.00
165.00
JULIAN DAY /73
STN 003 DEPTH 250 LAT 50 28.3 LONG 126 8.1


STN 004 DEPTH 075 LAT 50 28.0 LONG 126 8.2
TEMP C
6.00
8.00
STN 004 DEPTH 225 LAT 50 28.0 LONG 126 8.2
TEMP C
6.00
8.00
JULIAN DAY /73
51.00
59.00
67.00
75.00
83.00
91.00
99.00
107.00
115.00


STN 004 DEPTH 075 LAT 50 28.0 LONG 126 8.2
STN 004 DEPTH 150 LAT 50 28.0 LONG 126 8.2
STN 004 DEPTH 250 LAT 50 28.0 LONG 126 8.2
TEMP C
6.00
8.00
JULIAN DAY /73
101.00
109.00
117.00
125.00
133.00
141.00
149.00
157.00
165.00


SAL 0/00
32.00
30.00
STN 003 DEPTH 075 LAT 50 28.3 LONG 126 8.1
SAL 0/00
32.00
30.00
51.00
59.00
67.00
75.00
83.00
91.00
99.00
107.00
115.00
JULIAN DAY /73
STN 003 DEPTH 225 LAT 50 28.3 LONG 126 8.1

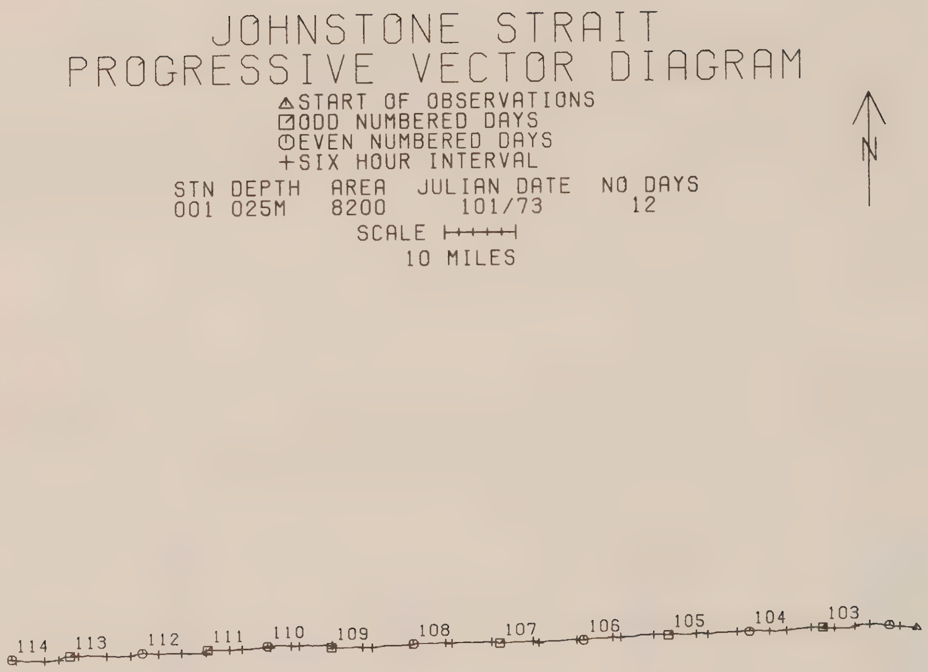
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 001 DEPTH 025 JOHNSTONE ST. 50 28.9 N 126 7.9 W LENGTH OF RECORD= 13 DAYS
START OF RECORD 10 MN 13 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	002	001	001																						8
10- 19	002	003	001																							6
20- 29	003	003	002																							8
30- 39	005	001	001																							7
40- 49	002	005	003	001																						11
50- 59	005	005	002																							12
60- 69	010	004	009	001	001																					25
70- 79		003			001																					4
80- 89	001	004	008	001	002																					16
90- 99	008	012	014	007	006	001																				48
100-109	005	010	005	001	003	001																				25
110-119	008	004	005	001	001	001																				20
120-129	002	004	001																							7
130-139	003	001	001																							5
140-149	004	002																								6
150-159	003	001																								4
160-169	004	001																								5
170-179		003		001																						4
180-189	002	002																								4
190-199	002		001																							3
200-209	002	005	002		001	001																				11
210-219	002	001																								3
220-229	004	007	004	002	002																					19
230-239	004	009	005	001	002	001																				22
240-249	003	006	002	004	005	004	003		002																	29
250-259	008	027	023	025	019	020	023	016	021	019	008	011														220
260-269	003	013	030	038	044	057	071	068	061	061	048	015	004													513
270-279	005	012	020	023	029	034	054	027	056	050	022	008	002	001												343
280-289	004	018	012	013	020	022	016	010	018	015	007	001														156
290-299	011	011	007	004	005	002	001																			41
300-309	005	008	001	001																						15
310-319	006	006																								12
320-329	004	004	001																							9
330-339	004	005																								9
340-349	010	004																								14
350-359	006	002																								8
	154	208	161	125	141	144	167	121	158	145	85	35	6	1	0	0	0	0	0	0	0	0	0	0	0	1652

NUMBER OF ZERO RATES 136


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
001 025M 8200 101/73 12
SCALE
10 MILES
N
103
104
105
106
107
108
109
110
111
112
113
114

TIDAL CURRENT ELLIPSE

STN 001 DEPTH 025 JOHNSTONE ST. 50 28.9 N 126 7.9 W

STARTING TIME OF ANALYSED DATA 0 MIN 15 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 12 DAYS 7 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	22.2	.0	1.6	180.0
K1	6.1	-.7	.9	95.8
M2	24.3	.7	2.2	34.8
M3	1.9	.2	6.7	198.2
M4	1.0	-.2	18.7	31.6
M6	.7	-.2	12.1	228.4
M8	.9	-.4	31.6	261.2
M12	.6	.1	125.8	107.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 001 DEPTH 025 JOHNSTONE ST. 50 28.9 N 126 7.9 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973

MAJOR COMPONENT									
-19	-23	-25	-25	-26	-26	-25	-20	-18	-20
MINOR COMPONENT									
0	-1	-1	-1	-1	0	-1	0	-1	-1

APR. 22 1973

MAJOR COMPONENT
-22
MINOR COMPONENT
-1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

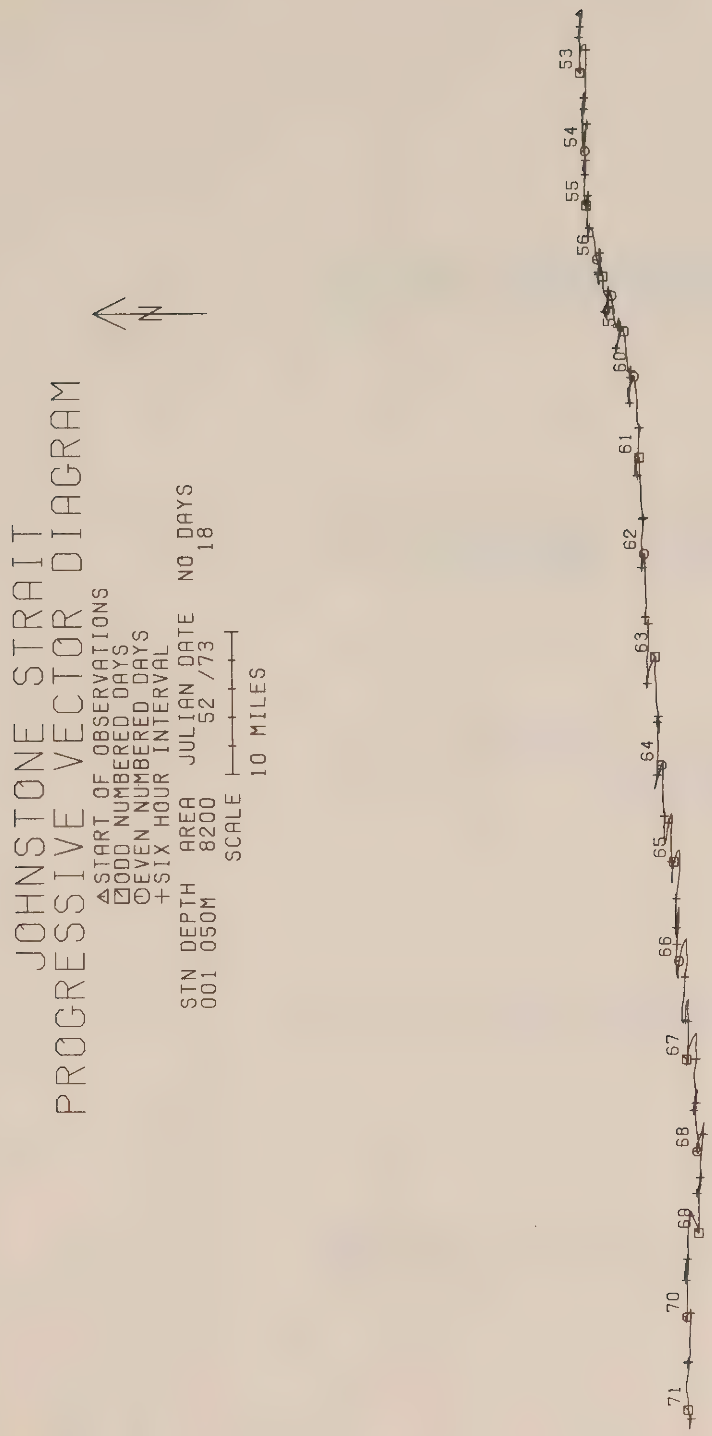
STN 001 DEPTH 050 JOHNSTONE ST. 50 28.9 N 126 7.9 W LENGTH OF RECORD= 19 DAYS

START OF RECORD 00 MN 10 HR 21 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	002																								7
10- 19	002	005	002																							9
20- 29	001	002	001																							4
30- 39	001	005																								6
40- 49	004	009	003																							16
50- 59	003	012	002	001	001	002	001																			22
60- 69	007	012	010	006	004	001	003																			43
70- 79	002	017	022	011	007	001	001	002																		63
80- 89	002	016	025	014	012	009	008	003	001	001																91
90- 99	010	012	028	019	009	008	018	010	003	003	001	002														123
100-109	002	022	017	014	015	007	011	011	012	306	002	001														120
110-119	007	015	014	010	007	008	002	001	003	004	001															72
120-129	002	006	006	006	006	005		001	003	001																36
130-139	003	005	007	004	001	001	001	001																		23
140-149	003	003	008	002	001	002	001																			20
150-159	004	008	003	001	001																					17
160-169	005	006	003	001																						15
170-179	004	003																								7
180-189	001	002																								3
190-199		006																								6
200-209	004	006	002	001																						13
210-219	005	007	001																							13
220-229	005	008	001																							14
230-239	005	013	006	005	001	001	001																			32
240-249	002	013	010	010	005	004		003		001	001															49
250-259	007	007	008	011	020	013	005	006	005	004	001	001	002													90
260-269	011	020	020	017	022	037	026	036	043	036	029	012	003	002												314
270-279	003	018	016	017	023	038	045	062	063	038	021	017	007													368
280-289	004	012	011	023	016	018	010	016	006	009	007	008														140
290-299	003	008	005	003	005	001	005																			30
300-309		006	003	006	003	001	001																			20
310-319	003	002	001	002	001																					9
320-329	002	002	001																							5
330-339	002	004	001																							7
340-349	003																									3
350-359	001	005	001																							7
	128	299	238	184	160	157	139	152	139	103	63	41	12	2	0	0	0	0	0	0	0	0	0	0	0	1817

NUMBER OF ZERO RATES 2


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
001 050M 8200 52 /73 18
SCALE
10 MILES
N
53
54
55
56
60
61
62
63
64
65
66
67
68
69
70
71

TIDAL CURRENT ELLIPSE

STN 001 DEPTH 050 JOHNSTONE ST. 50 28.9 N 126 7.9 W

STARTING TIME OF ANALYSED DATA 0 MIN 12 HR 21 DAY 2 MON 73 YR

LENGTH OF DATA 18 DAYS 20 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	11.6	.0	4.4	180.0
MSF	3.6	-.5	2.9	212.7
O1	2.7	-.5	11.9	271.8
K1	4.6	-1.6	173.2	223.5
M2	33.3	-.5	177.0	195.0
S2	10.5	-.3	174.0	219.4
2SM2	.8	.3	5.2	3.9
M3	1.2	.2	31.2	308.3
SK3	.6	.0	162.8	341.1
M4	1.6	.4	125.5	20.7
MS4	2.3	.0	154.6	76.1
S4	.4	.0	174.7	111.1
M6	.7	-.2	65.3	140.1
2MS6	1.3	.2	159.3	139.3
2SM6	.8	.3	157.4	233.0
M8	.7	-.3	72.0	132.8
3MS8	1.1	.0	154.3	233.9
M12	1.1	-.4	4.6	144.2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 001 DEPTH 050 JOHNSTONE ST. 50 28.9 N 126 7.9 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 22 1973

MAJOR COMPONENT									
-11	-8	-8	-3	-4	-6	-8	-12	-15	-17
MINOR COMPONENT									
0	0	-1	-1	-2	-2	-1	0	-1	0

MAR. 4 1973

MAJOR COMPONENT							
-16	-15	-15	-13	-13	-11	-11	-13
MINOR COMPONENT							
-1	-2	-1	-1	-2	0	2	0

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

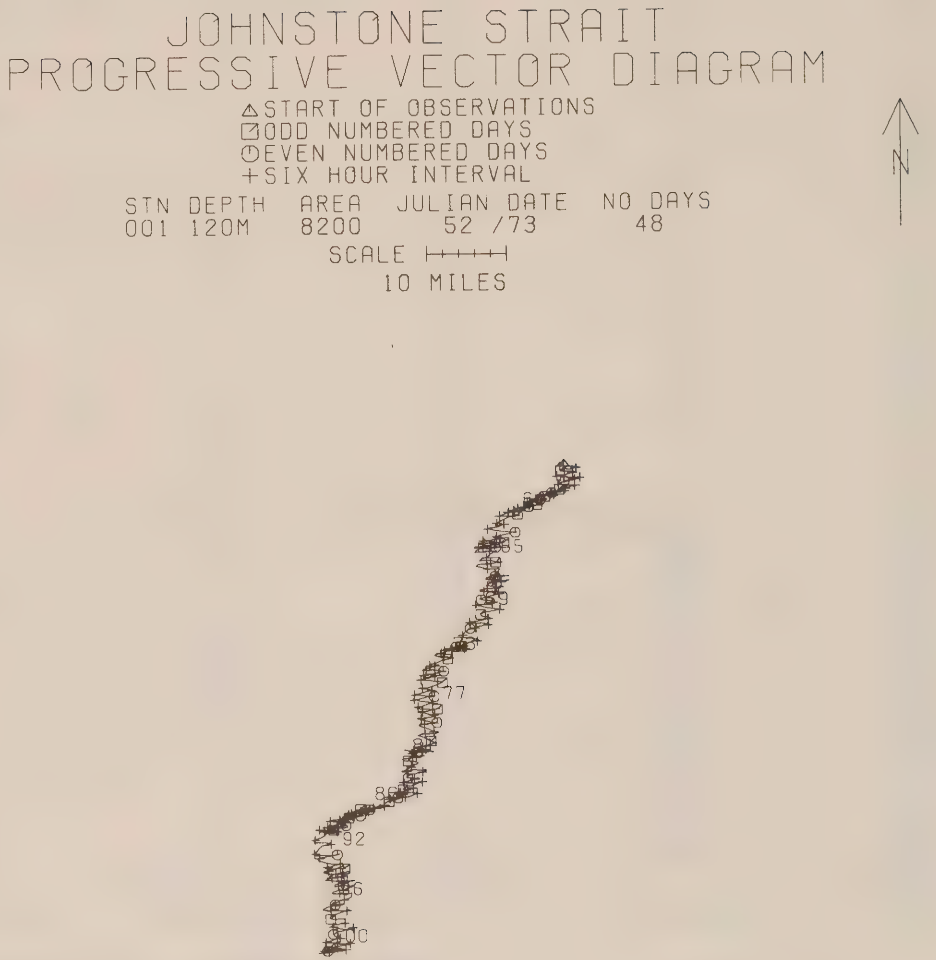
STN 001 DEPTH 120 JOHNSTONE ST. 50 28.9 N 126 7.9 W LENGTH OF RECORD= 49 DAYS

START OF RECORD 00 MN 10 HR 21 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001	005	003	001																						10
10- 19	003	004	001																							8
20- 29	002	008	003			001																				14
30- 39	001	005	002	001	001																					10
40- 49	005	007	005	003	002																					22
50- 59	007	009	009	008	010	001	001																			45
60- 69	007	019	029	020	021	006	003	002	002		003															112
70- 79	012	022	051	037	048	033	029	017	010	009	002															270
80- 89	004	053	052	053	067	078	061	054	045	021	003															491
90- 99	007	028	035	034	038	044	049	042	048	025	006	003														359
100-109	014	023	019	007	017	019	025	026	030	021	010	002	001													214
110-119	006	019	014	008	007	015	011	010	013	007	008	002														120
120-129	008	015	009	002	007	002	007	002	003	002																57
130-139	007	010	005	003	001	001		001		001																29
140-149	007	013	011	001	004	001	001																			38
150-159	001	010	003	001		001																				16
160-169	002	007	001	002			001																			13
170-179	003	012	008	002																						25
180-189	006	006	005	004	002	001		001																		25
190-199	002	004	001	001	002	001																				11
200-209	004	015	014	004	001	002	001	001																		42
210-219	004	013	018	013	005	005	002	001																		61
220-229	009	013	020	023	010	006	005	002	001																	89
230-239	011	025	031	045	029	024	019	004																		188
240-249	010	033	059	077	108	102	058	015	004																	466
250-259	006	045	075	107	161	149	075	022	004																	644
260-269	018	050	068	092	117	095	059	021	002																	522
270-279	014	056	071	062	034	048	032	006	002																	325
280-289	012	041	053	025	014	013	005	003	001																	167
290-299	013	032	014	008	004	003	003	001																		78
300-309	012	019	013	002	001	001																				48
310-319	004	013	006	002																						25
320-329	005	010	005																							20
330-339	005	013	004	001	002																					25
340-349	004	011			002																					17
350-359	003	004	004	002	001																					14
	239	672	721	651	716	652	447	231	165	86	32	7	1	0	0	0	0	0	0	0	0	0	0	0	0	4620

NUMBER OF ZERO RATES 3


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
001 120M 8200 52 /73 48
SCALE
10 MILES
N
77
92

TIDAL CURRENT ELLIPSE

STN 001   DEPTH 120   JOHNSTONE ST.   50 28.9 N   126   7.9 W

STARTING TIME OF ANALYSED DATA   0 MIN   12 HR   21 DAY   2 MON   73 YR

LENGTH OF DATA   48 DAYS   1 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	3.1	.0	65.0	180.0
MM	.9	.0	119.2	207.2
MSF	1.8	.0	150.5	210.4
2Q1	.9	.1	172.3	23.2
Q1	.3	.2	50.7	355.4
O1	3.5	-.3	8.6	318.9
NO1	.5	.2	5.4	259.4
K1	5.1	.1	3.1	352.0
J1	.5	-.1	163.1	187.3
OO1	.7	.3	175.0	257.7
MNS2	1.1	-.4	21.1	102.2
MU2	1.3	.0	58.2	190.9
N2	3.1	.9	173.0	189.8
M2	27.9	1.1	5.5	14.8
L2	.6	.5	15.5	55.3
S2	7.8	.0	.8	38.4
KJ2	.6	.1	51.2	229.8
2SM2	.7	-.1	175.5	116.9
MO3	1.5	-.5	12.8	103.8
M3	.4	.1	129.1	245.7
MK3	1.1	-.1	157.9	227.2
SK3	.4	.2	119.6	322.3
MN4	.6	.5	144.3	180.9
M4	4.8	.6	166.4	118.1
SN4	.7	.2	135.2	164.0
MS4	2.3	.5	167.8	175.4
S4	.3	-.1	17.0	293.7
2MN6	.4	.0	48.5	215.3
M6	2.3	-.8	176.0	81.4
MSN6	.4	-.1	150.0	204.9
2MS6	1.0	-.7	114.5	187.4
2SM6	.6	-.1	38.8	252.1
3MN8	.5	.0	112.3	267.7
M8	1.2	-.1	8.3	336.3
3MS8	.7	.0	3.9	27.4
M12	.5	.3	93.6	144.2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 001 DEPTH 120 JOHNSTONE ST. 50 28.9 N 126 7.9 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 22 1973										
MAJOR COMPONENT	2	-1	-2	-2	-2	-1	-2	-4	-4	-3
MINOR COMPONENT	-3	-2	-1	-1	-1	-2	0	-2	-4	-3
MAR. 4 1973										
MAJOR COMPONENT	-3	0	1	0	-1	1	-2	-2	-2	-3
MINOR COMPONENT	-1	-4	-5	-2	-3	-4	-4	-4	-1	-4
MAR. 14 1973										
MAJOR COMPONENT	-2	-1	-3	-1	-1	-1	-3	-2	1	0
MINOR COMPONENT	-4	-3	-4	-3	-3	-4	-5	-2	-4	-3
MAR. 24 1973										
MAJOR COMPONENT	-1	-2	-5	-3	-1	-3	-1	-4	-2	2
MINOR COMPONENT	-3	-1	-2	0	-2	-1	-2	-1	-7	-4
APR. 3 1973										
MAJOR COMPONENT	0	1	-1	0	2	0	0			
MINOR COMPONENT	-2	-2	-5	-3	-4	-4	-1			

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

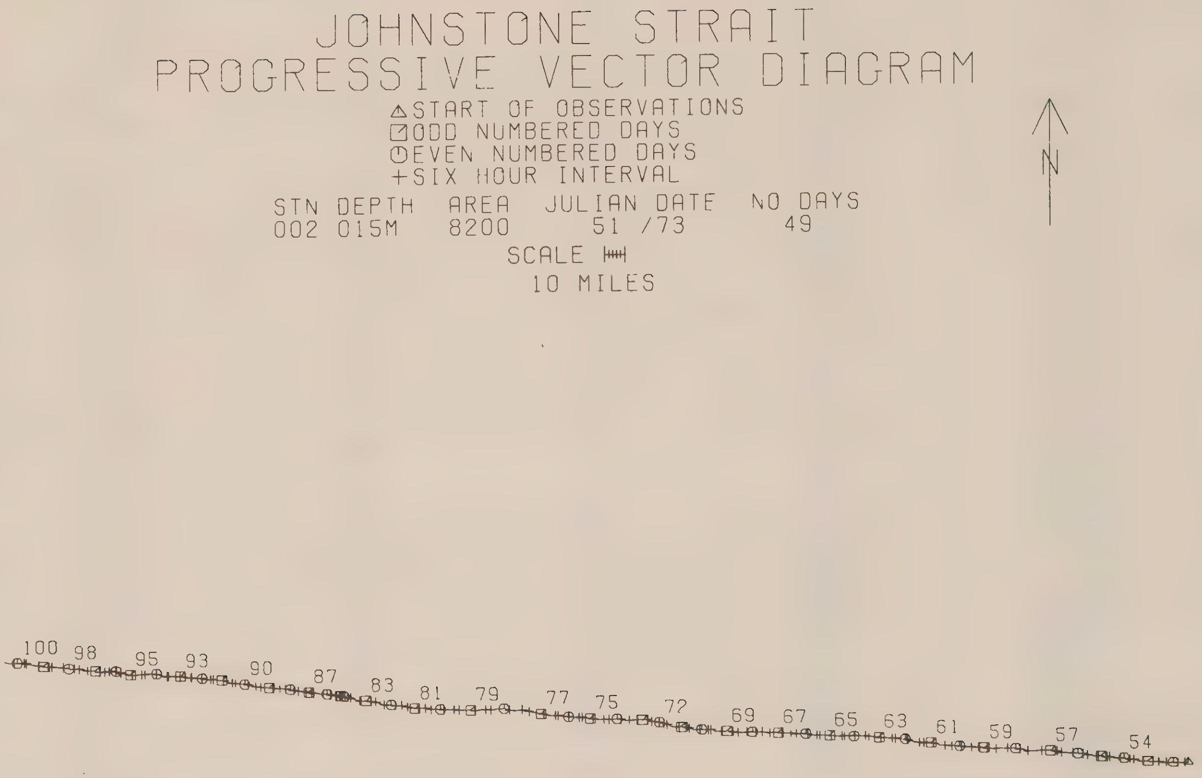
STN 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W LENGTH OF RECORD= 50 DAYS

START OF RECORD 30 MN 10 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		002																								2
10- 19		004																								4
20- 29		001																								1
30- 39		009	003																							12
40- 49		006	003	001																						10
50- 59		010		002																						12
60- 69		005	004		001	001	001	001																		13
70- 79		008	004	003	002	005		001	001																	24
80- 89		014	007	008	004	013	001	004																		51
90- 99		007	014	011	013	006	004	004																		59
100-109		016	008	014	008	006	006	003																		61
110-119		017	006	007	006	004	003	002																		45
120-129		006	002	001	001	001		002																		13
130-139		005	003	002	005		001	001																		17
140-149		003	001																							4
150-159		001		001																						2
160-169		006																								6
170-179		002	001																							3
180-189		003	001																							4
190-199			002																							2
200-209		005																								5
210-219		007	004	002																						13
220-229		010	003	003		001																				17
230-239		011	006	005	008	014	001																			45
240-249		021	009	013	015	018	004	002	001	001	005	001	001													91
250-259		034	023	035	064	072	057	054	045	039	046	025	014	005												513
260-269		015	022	039	058	101	071	089	109	132	073	060	024	014												807
270-279		050	038	079	121	267	178	230	282	243	215	167	065	020	002											1957
280-289		049	037	072	085	120	088	103	097	115	112	110	035	011	001											1035
290-299		040	062	074	069	069	056	039	033	039	041	048	013	007	001											591
300-309		045	045	046	040	031	010	008	007	007	008	009	003	001												260
310-319		034	021	023	013	007	004	002						001												105
320-329		023	017	016	009	004																				69
330-339		022	011	005	001	001																				40
340-349		011	001	001																						13
350-359		004	001																							5
	0	506	359	463	523	741	485	545	575	576	500	420	155	59	4	0	0	0	0	0	0	0	0	0	0	5911

NUMBER OF ZERO RATES 1172


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 015M 8200 51 /73 49
SCALE
10 MILES
N
100 98 95 93 90 87 83 81 79 77 75 72 69 67 65 63 61 59 57 54

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 12 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 49 DAYS 2 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	26.6	.0	174.6	.0
MM	2.6	-.2	179.7	93.3
MSF	3.4	.4	2.1	158.0
2Q1	1.0	-.2	177.5	194.2
Q1	.9	.7	101.7	258.9
O1	4.1	-.8	168.0	275.6
NO1	1.5	-.5	171.3	17.8
K1	7.2	-.8	175.6	282.4
J1	.9	.3	2.7	268.2
OO1	.9	-.2	177.4	119.1
MNS2	1.0	-.4	135.9	253.0
MU2	2.4	-.1	166.1	46.2
N2	4.3	-.7	175.6	202.5
M2	23.6	-2.0	176.4	217.2
L2	.7	.0	170.8	304.8
S2	8.8	-.2	178.6	240.3
KJ2	1.1	-.1	151.4	69.1
2SM2	.2	.0	26.6	108.0
MO3	1.5	.2	139.3	188.3
M3	.5	-.1	119.5	220.5
MK3	2.0	-.5	157.0	91.1
SK3	1.1	-.4	152.1	189.9
MN4	.8	-.4	166.2	190.1
M4	3.0	.9	168.8	142.8
SN4	.9	-.3	3.0	82.2
MS4	2.4	.0	176.2	222.7
S4	.7	-.6	164.4	334.5
2MN6	.5	-.1	123.5	127.0
M6	.5	-.2	6.3	308.0
MSN6	.6	-.1	99.9	211.1
2MS6	.9	.4	97.8	198.9
2SM6	.5	.0	137.2	219.0
3MN8	.4	.0	71.3	333.9
M8	.5	.0	67.3	198.5
3MS8	.8	-.1	25.1	260.9
M12	.1	.0	76.2	32.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973	MAJOR COMPONENT	-26	-24	-24	-25	-28	-39	-35	-28	-30	-28
	MINOR COMPONENT	1	3	3	4	3	3	1	2	4	[illegible]
MAR. 3 1973	MAJOR COMPONENT	-30	-29	-26	-25	-28	-29	-25	-27	-21	-24
	MINOR COMPONENT	3	2	0	3	1	1	1	2	4	4
MAR. 13 1973	MAJOR COMPONENT	-17	-28	-30	-26	-29	-38	-37	-33	-28	-25
	MINOR COMPONENT	4	1	1	3	3	6	-1	1	2	3
MAR. 23 1973	MAJOR COMPONENT	-26	-25	-5	-12	-19	-19	-22	-27	-26	[illegible]
	MINOR COMPONENT	5	5	1	2	2	3	3	4	5	3
APR. 2 1973	MAJOR COMPONENT	-24	-26	-27	-19	-18	-27	-26	-26		
	MINOR COMPONENT	2	3	0	4	1	3	2	5		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

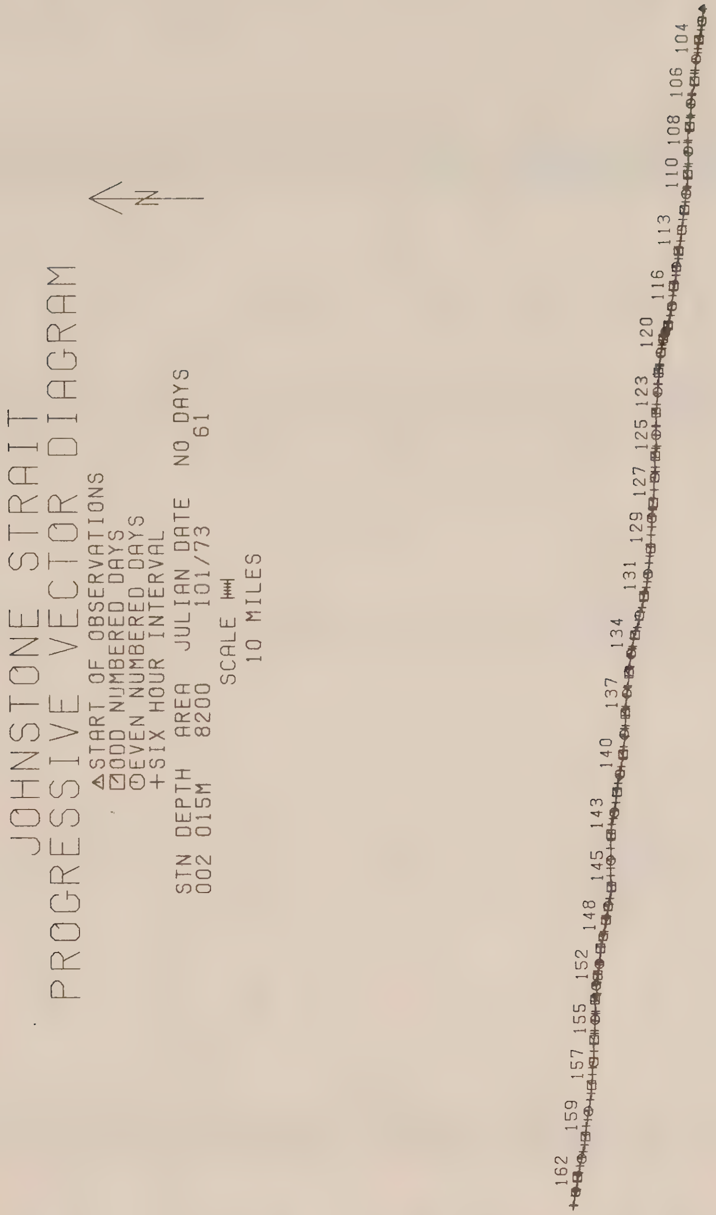
STN 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W LENGTH OF RECORD= 62 DAYS

START OF RECORD 20 MN 07 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		005	004																							9
10- 19		008		001																						9
20- 29		004																								4
30- 39		015	002																							17
40- 49		006	006		002																					14
50- 59		005	001	003																						9
60- 69		008	006	003																						17
70- 79		011	008	006	003	003																				31
80- 89		015	010	013	008	010	001																			57
90- 99		015	013	019	016	017	002																			82
100-109		019	012	022	013	015	004	001																		86
110-119		018	015	017	011	010	004																			75
120-129		006	006	005	003	005																				25
130-139		009	007	006	002	002	001																			27
140-149		006	003	002	001																					12
150-159		004		001																						5
160-169		006	001	004																						11
170-179		005	002																							7
180-189		006	002	002	001																					11
190-199		006	002	003																						11
200-209		009	006	003																						18
210-219		005	006	001	001																					13
220-229		009	012	004				001						001												27
230-239		021	009	012	011	004		001			001			002	001											62
240-249		020	023	015	016	010	006	004	006	003	005	009	002	005	003	001										128
250-259		034	046	050	047	063	033	034	068	046	046	054	020	012	007	002										562
260-269		030	022	042	063	098	091	084	096	105	075	068	034	026	008											842
270-279		080	063	118	164	275	210	248	259	223	204	131	069	032	013	003										2092
280-289		062	068	110	142	207	151	151	135	112	081	070	026	015	004	001										1335
290-299		060	090	089	132	161	073	075	059	058	039	026	015	007	002	002										888
300-309		075	079	069	053	074	021	027	009	011	007	011	007	004	001											448
310-319		034	024	016	013	009	008	002	002	002	002	005	004													121
320-329		032	024	011	010	003	004	001		001	002	003	001	001												93
330-339		032	011	007	002		001																			53
340-349		008	001	001	002																					12
350-359		008	004	001																						13
	0	696	588	656	716	966	610	629	634	561	462	377	178	105	39	9	0	0	0	0	0	0	0	0	0	7226

NUMBER OF ZERO RATES 1613


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 015M 8200 101/73 61
SCALE
10 MILES
N
104
106
108
110
113
116
120
123
125
127
129
131
134
137
140
143
145
148
152
155
157
159
162

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 9 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 61 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	23.5	.0	173.6	.0
MM	3.1	-.5	171.7	88.3
MSF	3.9	-1.0	4.1	285.2
2Q1	.7	.1	173.1	52.1
Q1	1.2	-.2	28.1	141.7
O1	2.9	-.2	8.0	110.2
NO1	.5	.0	135.8	33.4
K1	10.9	-.3	176.1	270.0
J1	1.5	.6	163.9	179.8
OO1	1.5	-.3	168.2	255.1
MNS2	1.3	-.7	35.0	170.8
MU2	3.6	-.2	7.2	312.9
N2	3.5	-.4	1.0	31.7
M2	21.7	-.9	174.9	223.3
L2	.6	.2	171.6	232.3
S2	7.2	-.3	176.4	213.5
KJ2	.9	-.1	139.3	34.2
2SM2	.6	-.4	34.6	183.0
MO3	1.7	.0	9.9	291.1
M3	.9	-.5	134.6	34.9
MK3	2.7	-.6	175.5	308.8
SK3	.6	-.2	125.3	195.2
MN4	1.4	.4	4.3	232.1
M4	2.4	-.1	155.0	334.7
SN4	.2	-.1	114.0	153.8
MS4	1.3	.3	145.8	148.3
S4	.2	.1	89.1	292.6
2MN6	.5	.1	25.6	147.0
M6	.3	-.1	143.7	110.4
MSN6	.5	-.2	22.3	82.2
2MS6	.7	.2	177.9	127.9
2SM6	.2	.0	75.8	142.8
3MN8	.7	-.3	57.4	314.2
M8	.5	-.2	3.4	256.0
3MS8	.5	.2	89.5	65.0
M12	.6	-.3	146.8	25.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 015 JOHNSTONE ST. 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973										
MAJOR COMPONENT	-22	-23	-27	-26	-30	-29	-29	-23	-20	-25
MINOR COMPONENT	4	3	2	4	2	2	1	2	2	3
APR. 22 1973										
MAJOR COMPONENT	-24	-19	-22	-23	-23	-6	-9	-19	-23	-24
MINOR COMPONENT	4	2	3	3	5	3	2	4	2	2
MAY 2 1973										
MAJOR COMPONENT	-25	-27	-26	-27	-30	-19	-35	-30	-25	-23
MINOR COMPONENT	2	0	2	0	2	2	2	3	5	5
MAY 12 1973										
MAJOR COMPONENT	-23	-23	-24	-25	-25	-25	-25	-23	-22	-25
MINOR COMPONENT	6	5	3	3	2	2	2	4	4	3
MAY 22 1973										
MAJOR COMPONENT	-26	-32	-31	-22	-17	-20	-14	-17	-14	-13
MINOR COMPONENT	3	1	-1	4	3	3	3	1	2	2
JUNE 1 1973										
MAJOR COMPONENT	-19	-24	-26	-27	-28	-31	-30	-26	-20	-18
MINOR COMPONENT	1	0	2	1	2	4	4	4	5	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

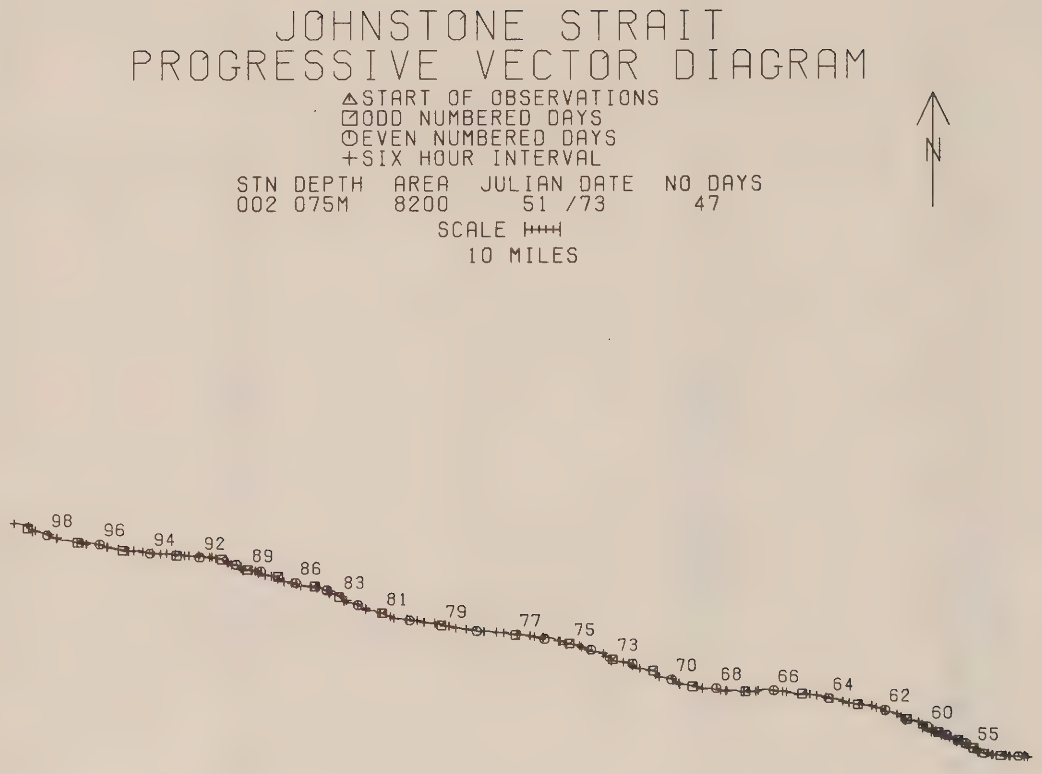
STN 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W LENGTH OF RECORD= 48 DAYS

START OF RECORD 30 MN 15 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	038	009	001																						53
10- 19	009	016	008																							33
20- 29	008	032	020	002																						62
30- 39	009	031	018	002																						60
40- 49	007	021	018	005																						51
50- 59	006	027	034	011																						78
60- 69	005	028	032	016	002																					83
70- 79	010	034	045	019	002	002																				112
80- 89	007	040	075	035	013	001	002		001																	174
90- 99	007	039	047	038	033	022	012	003																		201
100-109	012	032	041	026	025	023	012	006	003																	180
110-119	004	021	044	027	016	003	010		006	003																134
120-129	004	026	029	023	006	004	002				001															95
130-139	006	010	015	005	001		001																			38
140-149	004	013	008	004	002																					31
150-159	004	005	001	002																						12
160-169	001	006	003																							10
170-179	002	008		001																						11
180-189	004	009	001																							14
190-199	003	003																								6
200-209	005	006	007	001																						19
210-219	004	007	003	001	001		001																			17
220-229	004	013	004				001		002																	24
230-239	008	013	008	005	002	003	006	001	002																	48
240-249	005	015	017	002	008	006	004	005	005		001															68
250-259	010	022	026	016	016	025	010	009	005	005	001															145
260-269	005	020	035	042	044	067	053	025	038	022	008	003	002	001												365
270-279	010	035	075	051	104	115	120	087	075	055	026	008	007	002												770
280-289	003	033	060	058	094	110	087	096	061	045	029	019	009													704
290-299	009	038	067	063	079	072	059	035	020	017	005	005	008		001											478
300-309	005	029	039	031	024	027	014	003	003																	175
310-319	013	031	035	024	021	007	001	001																		133
320-329	003	029	027	008	001	001																				69
330-339	006	020	022	003	003																					54
340-349	008	021	016	002																						47
350-359	008	025	013	001																						47
	223	796	902	525	497	488	395	271	221	147	71	35	26	3	1	0	0	0	0	0	0	0	0	0	0	4601

NUMBER OF ZERO RATES 1


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 075M 8200 51 /73 47
SCALE
10 MILES
N
98
96
94
92
89
86
83
81
79
77
75
73
70
68
66
64
62
60
55

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 17 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 47 DAYS 20 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	13.4	.0	166.9	.0
MM	2.8	-.2	171.4	38.1
MSF	3.8	.4	9.5	197.3
2Q1	.8	-.1	21.0	326.5
Q1	.8	.1	12.5	98.3
O1	2.6	.0	8.7	80.2
NO1	.9	.0	11.5	297.8
K1	8.3	.0	173.3	276.5
J1	.5	-.1	128.6	146.8
OO1	.9	-.5	26.1	253.7
MNS2	.8	.0	157.8	198.7
MU2	1.8	-.5	168.1	81.5
N2	4.1	-.1	165.1	197.3
M2	23.6	1.2	173.4	221.1
L2	.4	-.2	120.6	11.4
S2	9.0	-.1	173.1	245.4
KJ2	.5	-.3	105.3	76.1
2SM2	.3	.1	1.8	309.9
MO3	1.3	-.2	13.7	47.1
M3	.9	.1	121.0	69.6
MK3	1.1	-.3	10.1	345.7
SK3	.7	-.2	21.3	53.2
MN4	.4	-.1	169.7	343.5
M4	2.5	-.4	165.4	334.5
SN4	.3	.0	52.4	307.3
MS4	1.9	-.3	167.1	85.6
S4	.8	.2	18.9	347.3
2MN6	.5	-.1	29.8	262.7
M6	1.0	-.1	86.9	235.7
MSN6	.6	.4	97.4	82.8
2MS6	1.3	.3	100.0	14.5
2SM6	.5	-.4	61.0	107.2
3MN8	1.0	-.3	127.7	27.9
M8	1.3	.3	131.0	338.0
3MS8	1.2	-.2	158.3	83.8
M12	.3	-.2	69.5	66.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT									
-10	-9	-7	-5	-5	-8	-6	-6	-12	-14
MINOR COMPONENT									
1	1	3	3	2	3	3	3	5	6

MAR. 3 1973

MAJOR COMPONENT									
-16	-18	-15	-17	-16	-17	-14	-12	-12	-12
MINOR COMPONENT									
4	4	2	2	-1	1	2	4	5	5

MAR. 13 1973

MAJOR COMPONENT									
-13	-13	-14	-16	-16	-23	-21	-19	-16	-15
MINOR COMPONENT									
3	6	4	4	2	2	3	4	4	4

MAR. 23 1973

MAJOR COMPONENT									
-11	-7	-7	-11	-11	-11	-9	-7	-9	-14
MINOR COMPONENT									
5	5	2	2	4	3	2	3	4	1

APR. 2 1973

MAJOR COMPONENT						
-14	-16	-16	-12	-13	-17	-11
MINOR COMPONENT						
1	1	2	3	1	4	4

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

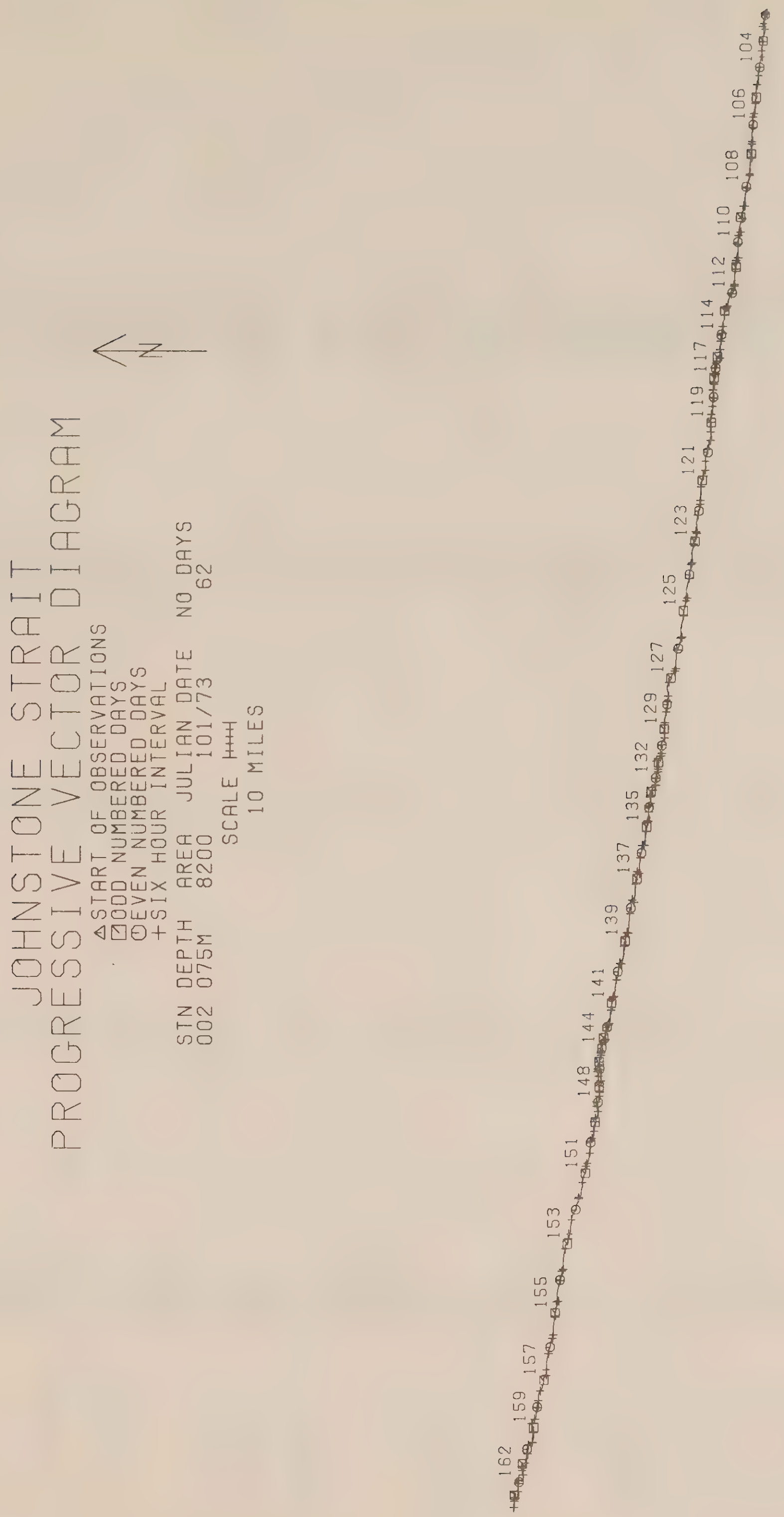
STN 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W LENGTH OF RECORD= 63 DAYS

START OF RECORD 00 MN 09 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	016	033	018	001	002																					70
10- 19	007	032	012	003																						54
20- 29	008	032	019	004																						63
30- 39	011	031	013		001																					56
40- 49	004	030	009	003	001																					47
50- 59	012	021	025	005	002																					65
60- 69	010	029	043	008	005																					95
70- 79	015	039	032	031	013																					130
80- 89	005	050	062	030	022	010	004		001																	184
90- 99	007	049	044	051	053	024	006	004	003	001																242
100-109	006	033	055	055	041	013	008	004	005	005																225
110-119	012	028	034	043	017	003	005	001	002																	145
120-129	009	024	026	011	010	002	002																			84
130-139	008	013	019	009	001																					50
140-149	007	016	012	003	002	001																				41
150-159	008	018	009	001																						36
160-169	006	011	006																							23
170-179	007	010	004	001		001																				23
180-189	006	010	007	001																						24
190-199	008	007	002	001																						18
200-209	007	013	008		001																					29
210-219	004	015	011	005	002																					37
220-229	012	024	016	008	004	002																				66
230-239	008	023	017	016	013	003	001			001																82
240-249	005	029	028	030	025	013	002	005	002	001																140
250-259	018	026	038	045	034	027	015	010	014	011	008	002	001													249
260-269	013	035	061	064	080	077	063	059	060	032	013	020	004	003												584
270-279	008	048	067	082	126	148	139	138	136	077	055	044	026	009	003											1106
280-289	007	030	061	071	084	116	097	101	073	043	041	028	023	007	001											783
290-299	014	037	064	066	092	073	050	029	029	013	007	007	003													484
300-309	012	030	052	040	042	032	009	006	005	003	003															234
310-319	011	026	057	052	037	009	005	002	001																	200
320-329	009	026	032	022	009	002																				100
330-339	012	032	021	011	001																					77
340-349	009	028	009	009	001																					56
350-359	009	035	016	002	002																					64
		973		784		556		359		187		101		19		0		0		0		0		0		5966
	330		1009		723		406		331		127		57		4		0		0		0		0		0	

NUMBER OF ZERO RATES 3


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 075M 8200 101/73 62
SCALE
10 MILES
N
104
106
108
110
112
114
117
119
121
123
125
127
129
132
135
137
139
141
144
148
151
153
155
157
159
162

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 11 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 62 DAYS 1 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	14.9	.0	170.3	.0
MM	2.3	-.1	168.8	17.5
MSF	5.4	-.3	169.0	35.0
2Q1	.9	-.3	151.4	263.0
Q1	.2	-.1	60.8	76.3
O1	2.2	1.0	3.8	51.2
NO1	.8	.7	4.8	267.9
K1	12.5	-.2	173.1	264.7
J1	.5	.3	102.8	233.2
OO1	1.4	-.5	164.5	287.1
MNS2	1.2	-.6	173.2	18.6
MU2	2.4	-1.1	166.2	115.9
N2	4.4	.4	175.7	213.3
M2	22.0	1.4	176.6	233.4
L2	.9	-.1	25.8	78.4
S2	6.5	-.4	166.0	220.0
KJ2	.5	.2	38.1	299.5
2SM2	.5	.1	67.1	101.7
MO3	1.6	-.2	176.5	332.3
M3	.4	-.1	93.4	16.4
MK3	2.7	-1.2	7.4	341.5
SK3	.2	.0	168.5	291.3
MN4	1.5	-.8	134.7	185.3
M4	2.3	-.6	163.3	57.4
SN4	.5	-.3	152.2	176.5
MS4	1.6	-.4	156.3	181.8
S4	.3	-.1	90.3	66.0
2MN6	.4	.0	15.0	332.2
M6	.6	-.4	130.5	169.7
MSN6	.4	.1	29.3	158.6
2MS6	.7	-.6	78.9	74.3
2SM6	.6	-.3	114.8	224.8
3MN8	.8	.0	88.4	147.1
M8	.4	.0	117.1	38.8
3MS8	1.1	.2	123.8	257.7
M12	.3	-.1	159.9	6.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973										
MAJOR COMPONENT	-16	-16	-18	-16	-18	-20	-19	-15	-15	-16
MINOR COMPONENT	1	2	2	2	1	3	3	2	1	2
APR. 22 1973										
MAJOR COMPONENT	-11	-15	-13	-7	-6	-12	-15	-18	-17	-19
MINOR COMPONENT	5	2	2	1	1	0	1	2	3	2
MAY 2 1973										
MAJOR COMPONENT	-18	-20	-22	-23	-18	-16	-15	-10	-10	-9
MINOR COMPONENT	2	3	4	3	4	2	2	1	2	2
MAY 12 1973										
MAJOR COMPONENT	-8	-10	-11	-16	-16	-18	-20	-19	-19	-15
MINOR COMPONENT	3	1	1	3	3	4	3	5	4	3
MAY 22 1973										
MAJOR COMPONENT	-6	-6	-8	-4	-11	-9	-12	-13	-18	-22
MINOR COMPONENT	2	1	2	0	0	1	2	3	3	6
JUNE 1 1973										
MAJOR COMPONENT	-21	-21	-20	-21	-20	-16	-12	-13	-9	-11
MINOR COMPONENT	5	4	3	3	4	4	2	4	3	2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 075 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

JUNE 11 1973
MAJOR COMPONENT
-8
MINOR COMPONENT
3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

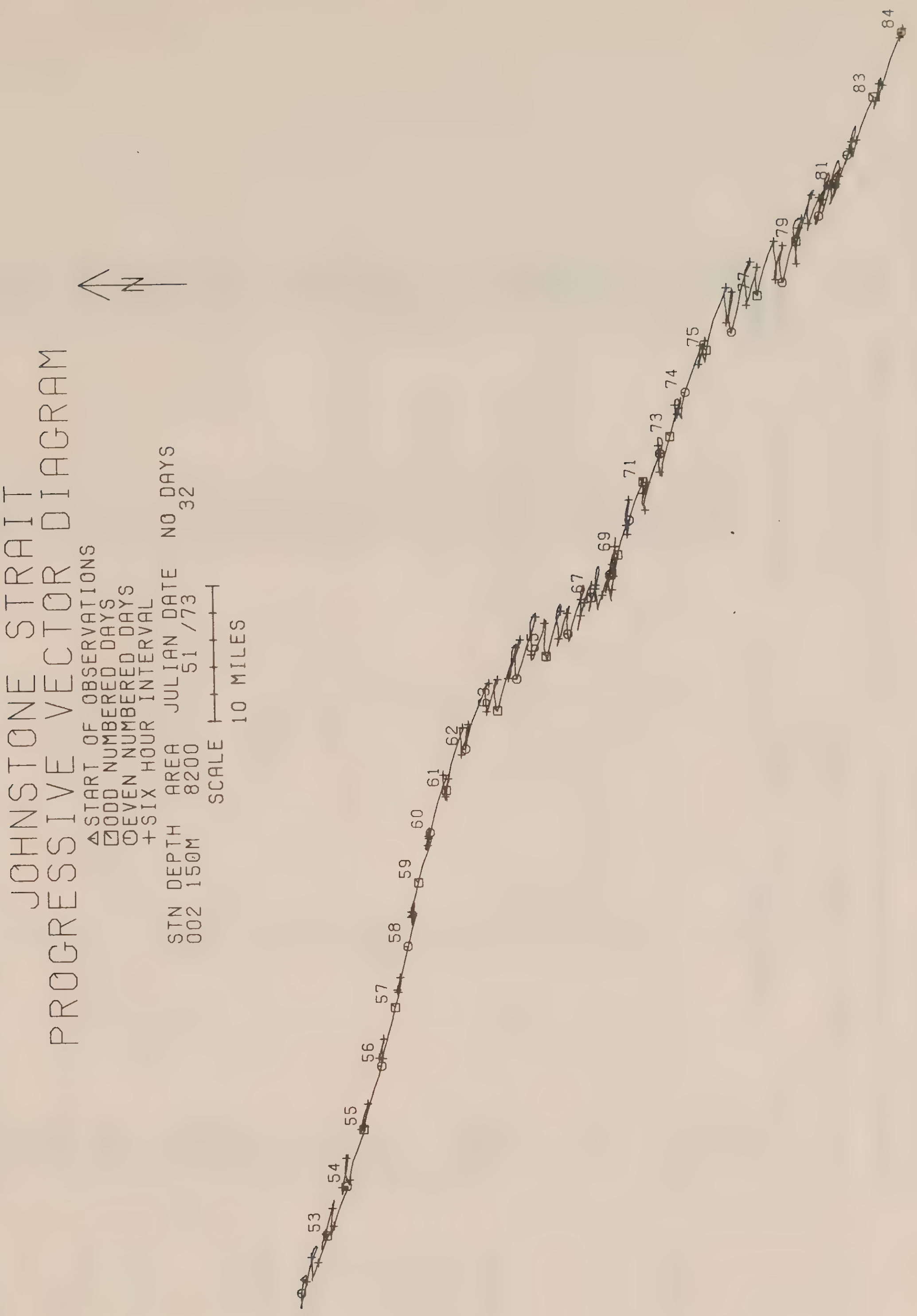
STN 002 DEPTH 150 JOHNSTONE ST. 50 28.6 N 126 8.0 W LENGTH OF RECORD= 33 DAYS

START OF RECORD 30 MN 19 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	008	009	003																							20
10- 19	005	005																								10
20- 29	003	005	001																							9
30- 39	006	007	006																							19
40- 49	006	010	009	002																						27
50- 59	012	009	006	001																						28
60- 69	006	014	006	007	001																					34
70- 79	012	033	024	022	005	002	001		001																	100
80- 89	018	023	035	030	035	017	006	004	001	001																170
90- 99	011	039	042	048	053	038	030	021	012	015	004	001	001		001											316
100-109	014	021	030	051	067	088	095	104	096	077	086	074	054	026	010	006	001									900
110-119	013	014	020	033	046	053	054	062	069	048	050	042	024	024	004	002										558
120-129	007	022	020	019	013	013	009	005	005	003		002														118
130-139	005	002	004	002	005	002	001	001																		22
140-149	006	006	003	001	001	001																				18
150-159	004	005			001		001																			11
160-169	002	005	002																							9
170-179	004	002	001																							7
180-189	001	003	002																							6
190-199	005	003	002																							10
200-209	001																									1
210-219	001	003																								4
220-229	003	003	001		002		001																			10
230-239	004	002	003	003	005	003																				20
240-249	002	003	008	011	012	006	001		001																	44
250-259	011	016	015	014	030	020	017	015	012	002	001															153
260-269	012	024	025	040	049	058	067	054	049	012	002															392
270-279	003	012	028	018	054	032	042	043	036	013	004															285
280-289	012	025	039	045	084	074	053	056	031	006	004															429
290-299	014	024	031	044	042	022	018	006	006																	207
300-309	001	013	019	019	008	005	004																			69
310-319	011	021	012	014	009	002																				69
320-329	014	018	019	010	002																					63
330-339	008	009	006	002																						25
340-349	005	009	005	001																						20
350-359	009	003	004	003																						19
	259	422	431	440	524	436	400	371	319	177	151	119	79	50	15	8	1	0	0	0	0	0	0	0	0	4202

NUMBER OF ZERO RATES 504


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 150M 8200 51 /73 32
SCALE
10 MILES
N

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 150 JOHNSTONE ST. 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 21 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 32 DAYS 14 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	6.6	.0	152.6	180.0
MM	2.3	.1	177.2	7.6
MSF	2.9	-.5	5.3	217.1
2Q1	.5	-.2	178.1	107.7
Q1	.6	-.1	107.2	67.1
O1	6.5	.1	160.2	187.9
NO1	.4	-.1	163.4	195.1
K1	10.6	.4	167.4	239.9
J1	.4	-.2	.8	129.6
OO1	1.7	.2	10.5	222.5
MNS2	.7	.1	159.8	122.2
MU2	1.5	-.5	171.6	19.4
N2	4.2	.3	177.8	215.6
M2	35.6	1.0	167.8	227.8
L2	1.1	.2	151.8	236.3
S2	11.1	.2	169.6	242.2
2SM2	.7	.1	175.7	226.0
MO3	1.7	-.7	31.4	142.2
M3	.4	.1	143.6	189.7
MK3	1.7	.3	89.6	197.4
SK3	.6	-.1	77.9	163.4
MN4	1.1	-.5	68.7	306.2
M4	4.0	-.5	116.6	356.6
SN4	.7	-.3	105.9	167.3
MS4	2.1	-.9	94.5	242.1
S4	.7	-.1	48.0	126.4
2MN6	.5	.0	6.2	160.4
M6	1.3	-.5	45.6	257.4
MSN6	1.1	-.2	14.5	82.7
2MS6	1.7	.0	16.5	138.7
2SM6	.5	-.2	60.6	18.2
3MN8	.3	-.1	72.4	113.8
M8	.9	.2	159.3	188.7
3MS8	.9	-.1	147.1	91.3
M12	.4	.0	139.7	334.3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 150 JOHNSTONE ST. 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT	10	9	10	11	11	11	11	8	6	6
MINOR COMPONENT	-4	-3	-3	-3	-3	-3	-2	-2	-2	-3

MAR. 3 1973

MAJOR COMPONENT	4	4	2	3	5	3	4	7	7	6
MINOR COMPONENT	-5	-3	-5	-3	-3	-3	-1	-2	-3	-3

MAR. 13 1973

MAJOR COMPONENT	5	8	6	1	4	1	5	3	4	5
MINOR COMPONENT	-3	-3	-3	-4	-4	-4	-2	-3	-3	-2

MAR. 23 1973

MAJOR COMPONENT	10	11
MINOR COMPONENT	-5	-4

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

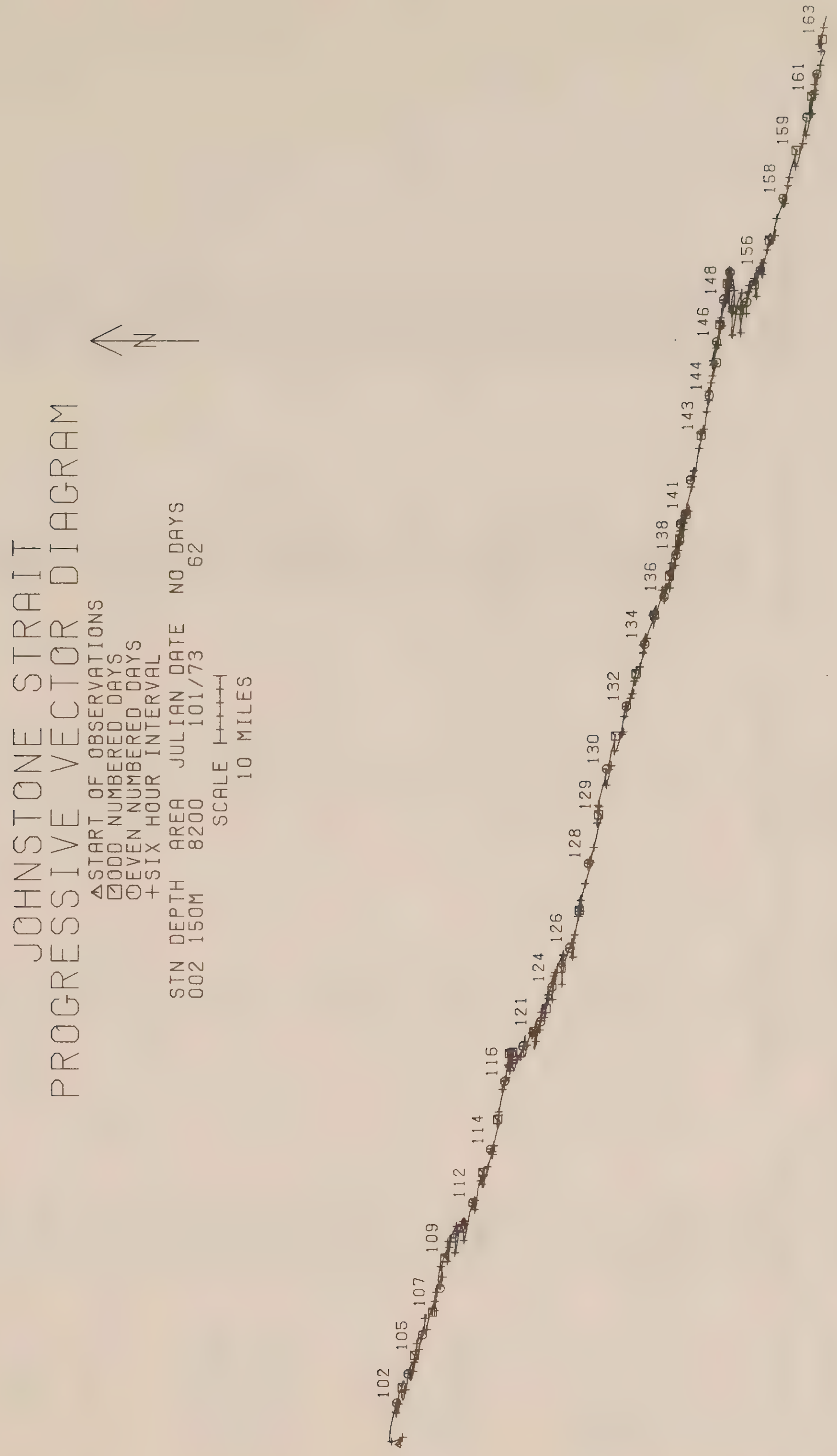
STN 002 DEPTH 150 JOHNSTONE ST 50 28.6 N 126 8.0 W LENGTH OF RECORD= 63 DAYS

START OF RECORD 00 MN 09 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	008	023	011	001																						43
10- 19	015	020	020	003																						58
20- 29	008	015	004	005																						32
30- 39	004	024	006	004																						38
40- 49	006	025	014	010	004	001																				60
50- 59	012	022	013	011	003	001	001																			63
60- 69	008	021	012	010	011	001	003																			66
70- 79	013	024	036	017	017	003		002																		112
80- 89	012	035	036	042	029	021	021	016	008	010	001															231
90- 99	007	035	054	060	063	071	069	075	050	051	034	032	033	019	017	015	007	006	003	003	001					705
100-109	011	026	041	065	078	102	091	094	097	091	072	077	086	052	059	026	016	008	004	007						1103
110-119	013	018	037	037	059	059	048	036	029	025	020	021	012	007	005	003	001	001								431
120-129	008	017	024	018	027	025	017	005	005	007	001	003														157
130-139	003	017	011	014	013	006	003	001	001																	69
140-149	002	011	010	005	002	001			001																	32
150-159	007	013	005	003																						28
160-169	005	005	004		001																					15
170-179	004	012	004																							20
180-189	003	007	002																							12
190-199	003	009	005		001																					18
200-209	003	008	008	001																						20
210-219	005	009	003	002																						19
220-229	008	018	012	006		002																				46
230-239	009	018	010	004	005	002	002	002		001																53
240-249	005	013	031	014	005	005	001	004		003																81
250-259	010	026	035	022	018	012	012	012	006	005	001															159
260-269	009	038	055	045	071	055	057	027	025	012	002		001													397
270-279	007	034	052	088	116	100	070	082	053	029	026	007	004													668
280-289	021	031	071	081	074	102	058	062	032	021	008	001														562
290-299	004	033	050	041	041	028	010	007	003	001																218
300-309	008	030	050	027	017	006	004	001																		143
310-319	012	034	023	010	004	002	001																			86
320-329	009	022	011	003																						45
330-339	013	019	018	001	001																					52
340-349	009	026	014	006	008	004																				67
350-359	009	024	017	003			001																			54
	293	762	809	659	668	609	469	426	310	256	165	141	136	78	81	44	24	15	7	10	1	0	0	0	0	5963

NUMBER OF ZERO RATES 0


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 150M 8200 101/73 62
SCALE
10 MILES
N
102
105
107
109
112
114
116
121
124
126
128
129
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163

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 150   JOHNSTONE ST   50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA   0 MIN 11 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 62 DAYS 1 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	7.3	.0	163.0	180.0
MM	2.3	.2	167.6	287.8
MSF	3.5	.3	177.0	349.5
2Q1	.7	.3	174.6	189.1
Q1	.6	.1	108.7	196.7
O1	6.1	-.2	164.0	208.8
NO1	1.8	-.1	157.8	95.5
K1	15.8	.9	172.1	221.2
J1	1.1	-.2	163.0	302.5
OO1	.3	.0	158.4	285.1
MNS2	1.1	.2	172.1	334.6
MU2	2.5	.3	163.2	70.6
N2	7.4	.0	168.9	213.5
M2	36.9	1.1	168.9	230.1
L2	1.7	.5	161.9	233.0
S2	8.3	.0	173.0	242.0
KJ2	.3	.2	30.7	322.6
2SM2	.5	.1	160.2	298.1
MO3	1.6	-.8	30.8	113.6
M3	.4	-.4	71.7	319.9
MK3	2.3	-1.5	63.4	276.8
SK3	.9	.0	19.9	92.8
MN4	1.0	-.3	156.2	178.4
M4	2.9	-1.4	123.9	129.1
SN4	1.2	-.4	145.4	234.2
MS4	1.7	-1.2	14.4	359.7
S4	.2	.1	79.2	157.0
2MN6	1.0	-.1	36.4	307.8
M6	1.5	.2	54.9	224.2
MSN6	.5	.0	80.6	17.2
2MS6	1.0	.2	82.5	37.8
2SM6	.3	.0	144.9	302.8
3MN8	.5	.1	94.5	16.7
M8	.4	.1	111.9	320.0
3MS8	.1	.0	141.1	356.0
M12	.3	.1	10.0	353.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 150 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973										
MAJOR COMPONENT	5	4	6	7	7	7	10	6	3	8
MINOR COMPONENT	-2	-2	-2	-3	-3	-2	-2	-3	-3	-3
APR. 22 1973										
MAJOR COMPONENT	10	7	9	12	9	0	0	2	5	3
MINOR COMPONENT	-3	-2	-2	-2	-2	-1	0	-3	-3	-2
MAY 2 1973										
MAJOR COMPONENT	4	7	6	6	12	15	15	15	11	9
MINOR COMPONENT	-2	-2	-3	-3	-3	-3	-3	-3	-3	-4
MAY 12 1973										
MAJOR COMPONENT	10	9	9	6	7	7	5	5	3	11
MINOR COMPONENT	-3	-3	-3	-3	-2	-2	-1	0	-2	-1
MAY 22 1973										
MAJOR COMPONENT	14	13	11	7	5	8	5	4	-4	-8
MINOR COMPONENT	-3	-3	-2	0	-1	-1	-1	-1	0	-1
JUNE 1 1973										
MAJOR COMPONENT	0	3	6	5	10	13	15	11	7	7
MINOR COMPONENT	-2	-2	-2	-2	-3	-4	-4	-4	-1	-2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 150 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

JUNE 11 1973
MAJOR COMPONENT
11
MINOR COMPONENT
-2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

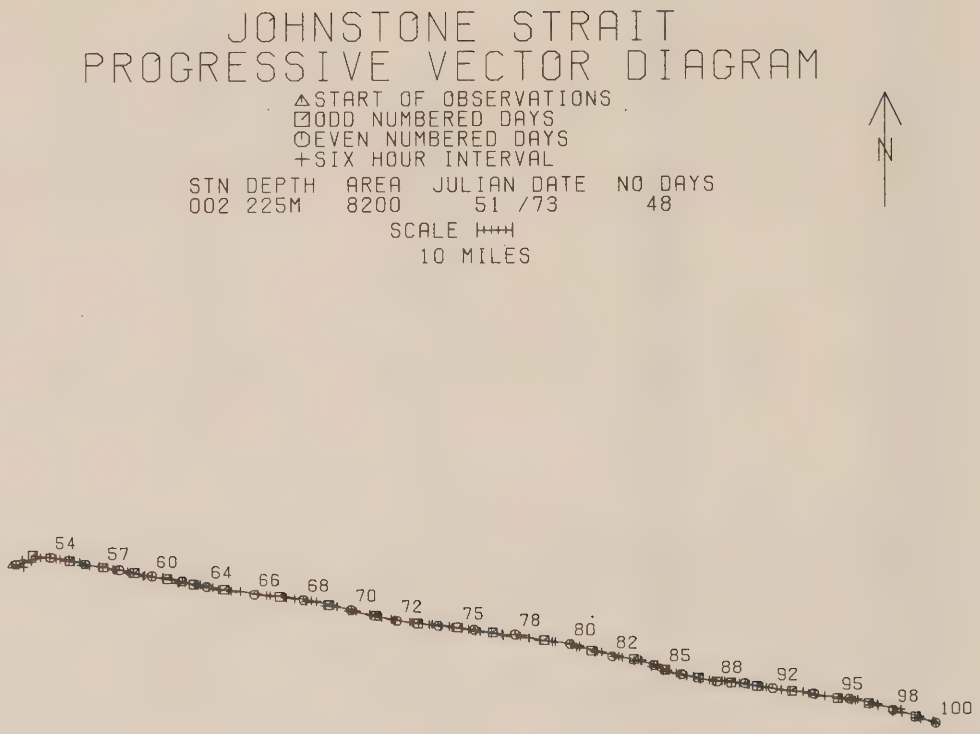
STN 002 DEPTH 225 JOHNSTONE ST 50 28.6 N 126 8.0 W LENGTH OF RECORD= 49 DAYS

START OF RECORD 30 MN 15 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	008	001																							13
10- 19	004	004	002																							10
20- 29	004	001																								5
30- 39	010	006	001	001																						18
40- 49	001	008																								9
50- 59	005	006	004																							15
60- 69	012	009	005	002	001			001			001			001												32
70- 79	009	012	006	008	003	001		002	001	002	003	004	003	002	001											57
80- 89	002	020	023	020	014	009	008	004	004	007	005	009	010	005	001	002	002	002	001							148
90- 99	011	028	050	047	047	066	059	052	092	090	078	089	068	051	065	058	098	051	033	009	003					1145
100-109	009	029	052	060	084	070	062	046	066	066	045	050	055	041	033	031	023	013	001		001					837
110-119	006	023	029	034	024	012	013	007	008	009		002	001													168
120-129	008	023	023	014	008	001	002	001	001																	81
130-139	007	010	007	001	001	001																				27
140-149	003	014	008	005		001																				31
150-159	006	011	003	003		001																				24
160-169	004	005	005	001																						15
170-179	001	009	008	002																						20
180-189	003	007	001																							11
190-199	004	006	006	001																						17
200-209	003	010	006																							19
210-219	008	008	009																							25
220-229	003	007	005	003	002																					20
230-239	009	011	003	003		001																				27
240-249	009	014	005	004	002																					34
250-259	011	029	015	012	012	012	007	007																		105
260-269	008	022	041	041	051	043	030	026	019	007	001	002														291
270-279	007	018	042	051	077	066	103	130	078	064	038	015	001													690
280-289	007	035	027	037	051	061	059	064	056	056	022	011	001													487
290-299	007	014	026	023	017	017	020	010	002	002																138
300-309	003	011	018	008	011	003	002	002	002																	60
310-319	012	010	012	002	004		003																			43
320-329	005	006	006		001																					18
330-339	003	006	002																							11
340-349	005	010	004																							19
350-359	007	005																								12
	220	455	455	383	410	365	368	352	329	303	193	182	139	100	100	91	123	66	35	9	4	0	0	0	0	4682

NUMBER OF ZERO RATES 7


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 225M 8200 51 /73 48
SCALE
10 MILES
N
54
57
60
64
66
68
70
72
75
78
80
82
85
88
92
95
98
100

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 225 JOHNSTONE ST 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 17 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 48 DAYS 18 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	11.8	.0	170.3	180.0
MM	1.8	.3	172.0	221.0
MSF	2.2	-.3	4.0	27.3
2Q1	.5	-.1	112.0	55.4
Q1	1.4	.2	167.0	186.8
O1	10.6	-.2	172.3	192.3
NO1	.9	-.3	41.4	308.8
K1	13.1	.3	173.7	206.8
J1	.2	.1	88.0	229.1
OO1	1.1	-.1	12.8	120.8
MNS2	.4	.2	99.1	232.8
MU2	1.7	.3	158.9	34.1
N2	7.1	-.6	173.4	197.1
M2	48.9	-1.2	172.6	222.3
L2	1.4	-.4	176.0	222.9
S2	16.6	-.2	172.8	234.9
KJ2	.8	-.2	148.6	2.9
2SM2	1.1	.1	173.8	233.3
MO3	.9	.4	14.7	276.7
M3	1.1	-.1	10.5	180.8
MK3	.8	-.5	149.4	83.3
SK3	.4	.2	42.9	212.5
MN4	.9	-.7	157.1	182.0
M4	2.7	-.7	167.4	182.1
SN4	.4	.0	105.2	349.5
MS4	2.1	-1.2	177.3	224.2
S4	.9	-.4	163.0	247.8
2MN6	.8	-.1	15.4	173.7
M6	1.7	.0	35.0	147.3
MSN6	.4	.1	48.8	293.6
2MS6	1.1	-.2	35.1	233.8
2SM6	.4	.0	39.7	81.0
3MN8	.5	-.3	101.2	46.3
M8	.5	-.3	89.3	23.8
3MS8	.5	-.3	44.9	204.8
M12	.5	-.2	14.7	142.5

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 225 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973									
MAJOR COMPONENT									
11	11	12	9	9	9	8	9	7	9
MINOR COMPONENT									
6	-1	-2	-2	-2	-1	-1	-2	-2	-1
MAR. 3 1973									
MAJOR COMPONENT									
7	8	11	21	16	16	16	15	15	11
MINOR COMPONENT									
-3	-2	-2	-3	-2	-2	-4	-3	-4	-3
MAR. 13 1973									
MAJOR COMPONENT									
11	10	10	9	11	14	19	18	15	14
MINOR COMPONENT									
-2	-1	-1	-1	-2	-3	-2	-3	-4	-4
MAR. 23 1973									
MAJOR COMPONENT									
14	13	8	9	9	9	7	7	6	9
MINOR COMPONENT									
-3 ,	-3	-3	-2	-2	-2	-1	0	-1	-2
APR. 2 1973									
MAJOR COMPONENT									
12	14	16	9	13	16	14	11		
MINOR COMPONENT									
-2	-2	-3	0	-3	-5	-5	-4		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

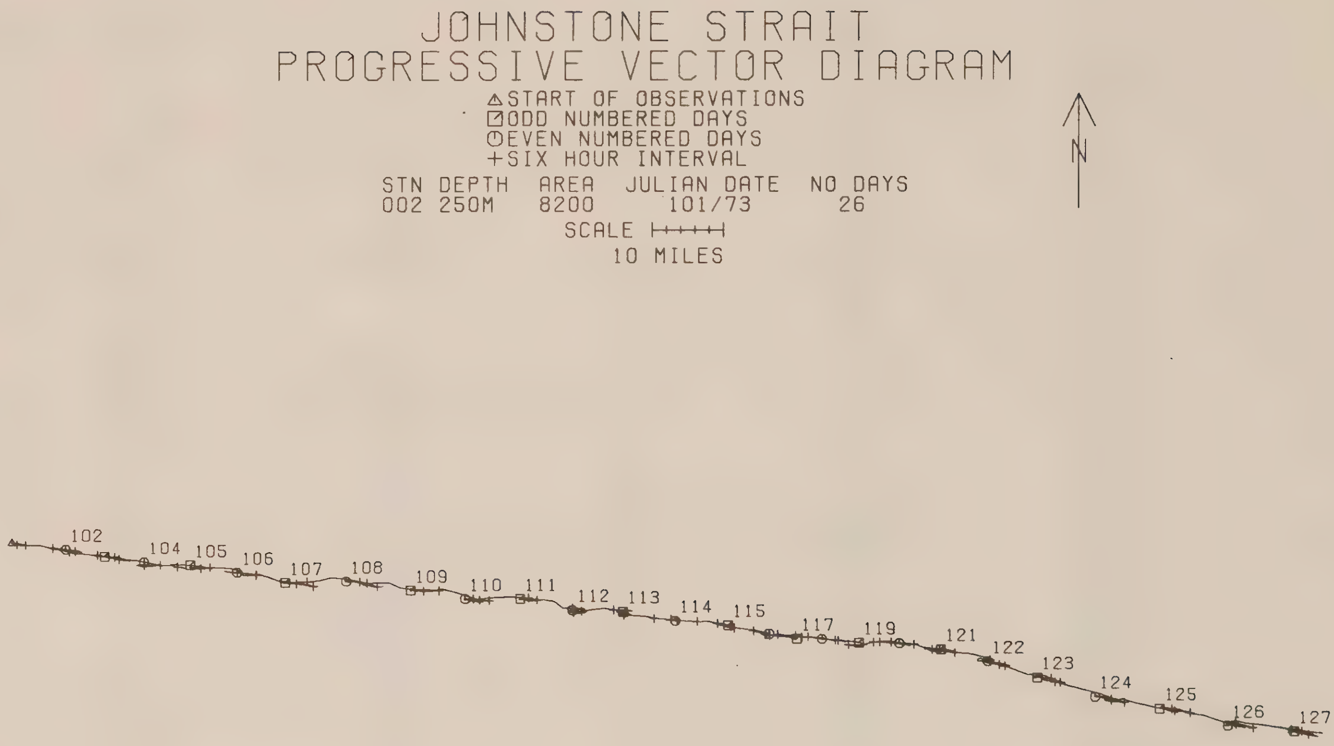
STN 002 DEPTH 250 JOHNSTONE ST 50 28.6 N 126 8.0 W LENGTH OF RECORD= 27 DAYS

START OF RECORD 00 MN 09 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	001		001																						5
10- 19	006	002	001																							9
20- 29	004	008	001																							13
30- 39	004	006	001																							11
40- 49	001	002	004																							7
50- 59	005	005																								10
60- 69	004	009	007	003								001				002		001								27
70- 79	004	008	007	003	006	001	001			002	002	001	002	002	003	009	004	007								62
80- 89	003	008	005	016	011	012	011	007	010	006	005	008	015	011	015	015	009	006	002	002						177
90- 99	004	012	015	022	035	035	032	038	054	043	044	067	041	039	019	021	015	010	001							547
100-109	002	012	015	024	037	034	038	028	032	052	025	032	025	010	017	011	012	013	003	001	001					424
110-119	004	004	018	013	007	012	009	009	008	006	004	001	002	001	003	011	007	008	008	005	002					142
120-129	001	009	008	005	001	001	001	002	001			001			001	001	002	002	001							37
130-139	003	008	004		002												003	001								21
140-149	002	003	002																							7
150-159	001	003			001																					5
160-169	002	002	001	001																						6
170-179		001	001		001																					3
180-189	001	001	002	001	001																					6
190-199	002		001																							3
200-209	002	004	004	001																						11
210-219	002	002	003	004	001																					12
220-229	002	005	004	004	002																					17
230-239	004	005	005	004	001	001																				20
240-249		007	006	004	003	002	001																			23
250-259		008	010	010	007	003	008	001	001																	48
260-269	005	008	020	019	016	031	026	020	020	013	006															184
270-279	003	008	011	027	027	045	039	043	052	026	015	003														299
280-289	002	009	013	019	018	027	018	020	023	022	004	002														177
290-299	005	012	014	009	010	011	009	012	004		001															87
300-309	002	005	007	009	004	009	002	007	003	001																49
310-319	004	006	005	001	004	002	001	001																		24
320-329	004	011	005	004			001																			25
330-339	003	005	002	001																						11
340-349	005	002	002	001																						10
350-359	002	004																								6
	101	205	204	206	195	226	197	188	208	171	106	116	85	63	58	70	52	48	15	8	3	0	0	0	0	2525

NUMBER OF ZERO RATES 0


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
◻ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 250M 8200 101/73 26
SCALE
10 MILES
N
102
104
105
106
107
108
109
110
111
112
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114
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126
127

TIDAL CURRENT ELLIPSE

STN 002 DEPTH 250 JOHNSTONE ST 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 11 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 26 DAYS 4 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	14.9	.0	171.7	180.0
MSF	3.2	.1	164.7	217.8
2Q1	1.4	-.1	24.8	272.5
Q1	.8	.4	110.7	223.5
O1	8.4	-.5	172.4	198.6
K1	15.5	-.7	172.4	186.6
J1	.5	-.3	127.7	118.2
OO1	.6	.0	48.7	341.0
N2	8.6	.0	163.9	209.6
M2	46.9	-1.6	172.8	223.9
L2	3.4	-.9	.1	65.0
S2	13.3	-1.1	174.1	220.7
2SM2	1.7	.4	18.6	94.7
MO3	2.3	-.2	176.3	25.9
M3	1.3	-.5	.0	278.0
MK3	2.2	.2	8.1	83.1
SK3	1.5	-.1	39.3	339.8
MN4	.8	.1	150.7	247.8
M4	3.1	-.4	157.9	2.3
MS4	1.3	-.1	152.3	207.8
S4	.6	.1	2.8	335.7
2MN6	1.5	-.4	172.5	181.6
M6	2.1	-.3	18.8	168.5
2MS6	2.0	.2	38.0	1.9
2SM6	.7	.0	86.0	267.8
3MN8	1.1	-.4	85.6	28.3
M8	.8	-.2	59.5	210.9
3MS8	1.2	-.2	80.0	116.4
M12	.4	.2	133.5	51.2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 250 JOHNSTONE ST 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973

MAJOR COMPONENT	12	12	14	14	15	18	19	16	17	16
MINOR COMPONENT	-2	-2	-1	-2	-3	0	-3	-3	0	-3

APR. 22 1973

MAJOR COMPONENT	15	16	16	12	8	8	11	12	12	14
MINOR COMPONENT	-1	-3	-1	-3	-1	0	-1	0	-2	-4

MAY 2 1973

MAJOR COMPONENT	15	17	20	20	20
MINOR COMPONENT	-5	-6	-4	-5	-2

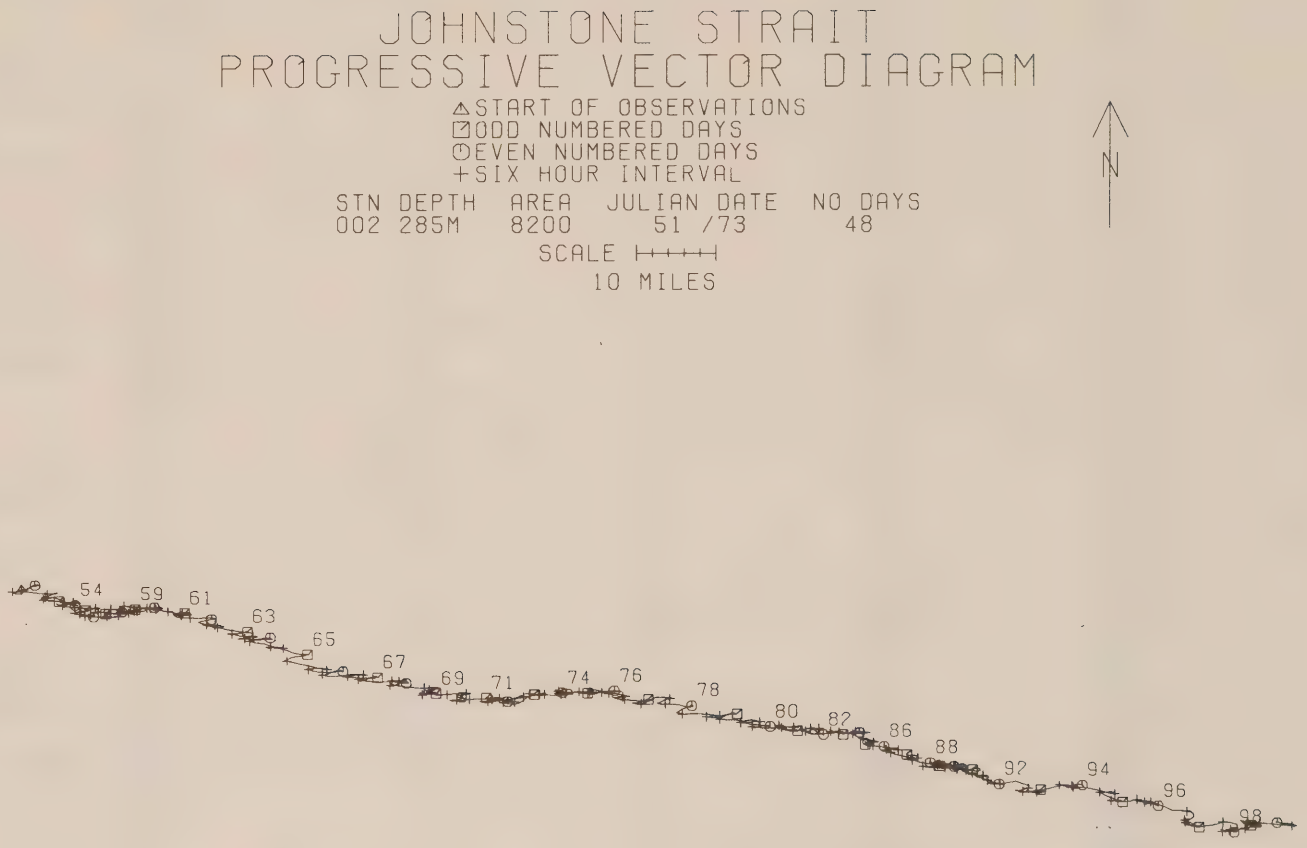
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 002 DEPTH 285 JOHNSTONE ST. 50 28.6 N 126 8.0 W LENGTH OF RECORD= 49 DAYS
START OF RECORD 50 MN 17 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	006	012	007																							25
10- 19	006	006	005																							17
20- 29	017	013	005	001																						36
30- 39	012	008	004	002								001														27
40- 49	015	009	007	006	001		002	002	002	002																46
50- 59	009	019	012	006	001		001	004	002	001	005	004														64
60- 69	023	025	024	022	025	012	002	004	004	012	011	002														166
70- 79	002	007	015	012	015	015	004	007	014	018	006	008	003													126
80- 89	008	011	016	023	037	045	044	044	056	083	077	032	007													483
90- 99	027	031	071	090	154	136	196	194	227	133	051	033	018	004	003											1368
100-109	016	034	048	060	116	098	112	091	081	052	029	031	027	003												798
110-119	012	027	055	041	066	056	063	028	019	004	005	002	002													380
120-129	010	026	039	024	016	013	013	008	001			003	001													154
130-139	010	007	016	009	001	001																				44
140-149	007	021	011	005	002	001																				47
150-159	009	011	007	002	001																					30
160-169	012	014	007	002	002	001	001	002																		41
170-179	004	002				002	001																			9
180-189	009	004	003			001																				17
190-199	007	002	001				001	001																		12
200-209	004	005	005		001																					15
210-219	003	003	001		001																					8
220-229	004	009	004	002	001	001	002	001																		24
230-239	004	011	006	005	002	012	020	008	002																	70
240-249	002	006	012	006	009	027	049	016	001																	128
250-259	003	020	039	036	100	169	160	069	018	001																620
260-269	001	010	031	047	110	138	083	041	012	002																475
270-279	003	017	024	040	083	083	066	014	001																	331
280-289	007	017	035	066	119	111	064	017																		436
290-299	005	022	040	074	069	053	009	002																		274
300-309	005	003	023	023	022	002																				78
310-319	009	009	038	030	023	006																				115
320-329	009	021	035	013	002																					80
330-339	005	010	015	003	001																					34
340-349	016	025	024	001																						66
350-359	014	012	004																							30
	320	489	689	651	980	983	893	553	440	308	184	116	58	7	3	0	0	0	0	0	0	0	0	0	0	6674

NUMBER OF ZERO RATES 344


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
002 285M 8200 51 /73 48
SCALE
10 MILES
N
54
59
61
63
65
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TIDAL CURRENT ELLIPSE

STN 002 DEPTH 285 JOHNSTONE ST. 50 28.6 N 126 8.0 W

STARTING TIME OF ANALYSED DATA 0 MIN 20 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 48 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	7.3	.0	170.3	180.0
MM	1.8	.5	10.4	20.0
MSF	2.7	-.3	155.3	214.7
2Q1	.5	.0	46.1	347.4
Q1	1.0	-.2	25.2	351.7
O1	8.2	-.1	179.7	193.8
NO1	.7	.2	110.9	303.9
K1	9.7	-.2	179.6	199.3
J1	.2	-.1	97.4	343.3
OO1	.9	.0	18.9	78.5
MNS2	1.1	.5	5.8	34.7
MU2	1.8	.3	.4	237.8
N2	4.7	-.7	13.6	11.2
M2	33.3	1.9	178.7	220.6
L2	1.1	-.3	149.7	249.7
S2	11.2	.0	2.5	53.8
KJ2	1.3	-.2	174.2	311.5
2SM2	.8	-.2	4.7	339.0
MO3	2.2	-.2	146.0	271.1
M3	1.1	.2	174.9	239.3
MK3	1.0	.2	22.4	317.8
SK3	.8	.2	22.7	60.8
MN4	.7	-.2	7.0	348.0
M4	2.8	.1	14.7	317.6
SN4	.8	.1	69.0	135.0
MS4	1.8	.0	47.2	17.6
S4	.2	.0	21.1	64.2
2MN6	1.2	.6	54.8	20.1
M6	1.8	1.2	121.2	52.6
MSN6	1.1	.3	109.5	136.5
2MS6	2.2	.8	124.1	120.1
2SM6	.6	-.3	139.7	201.6
3MN8	.3	.0	131.1	132.7
M8	1.0	.0	112.7	88.3
3MS8	1.4	-.3	122.2	168.2
M12	.4	.2	32.3	157.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 002 DEPTH 285 JOHNSTONE ST. 50 28.6 N 126 8.0 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973										
MAJOR COMPONENT	9	7	6	3	3	3	2	3	6	6
MINOR COMPONENT	-2	-1	-2	-2	0	1	0	1	-1	-2
MAR. 3 1973										
MAJOR COMPONENT	7	7	7	10	11	12	10	10	9	7
MINOR COMPONENT	-3	-3	-2	-6	-2	-1	-2	-1	-1	0
MAR. 13 1973										
MAJOR COMPONENT	4	6	5	6	6	11	11	9	10	9
MINOR COMPONENT	1	0	1	0	-2	-1	-3	-2	-1	-1
MAR. 23 1973										
MAJOR COMPONENT	8	7	3	7	5	5	2	3	3	6
MINOR COMPONENT	-1	0	-2	-2	-2	-2	-1	1	-1	-3
APR. 2 1973										
MAJOR COMPONENT	10	10	11	10	13	12	7	10		
MINOR COMPONENT	-3	2	-2	-2	-5	-3	1	0		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

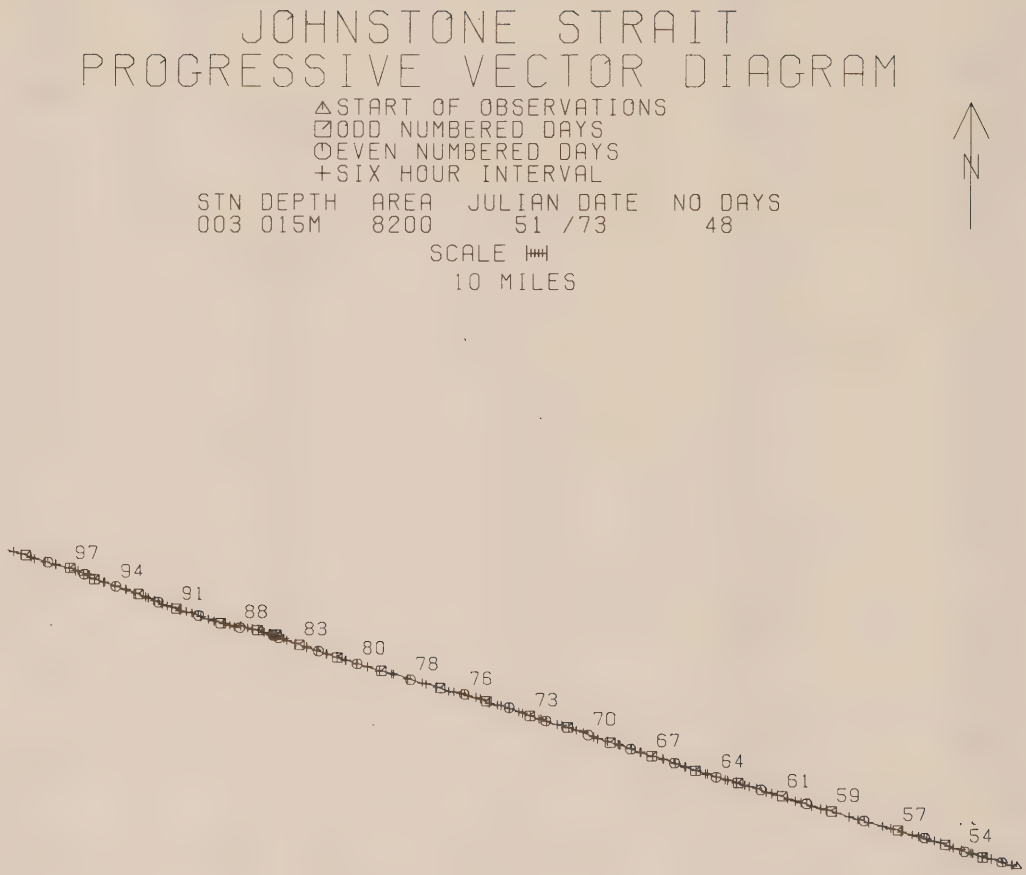
STN 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 49 DAYS

START OF RECORD 00 MN 09 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		004	001																							5
10- 19	002	004	002	001																						9
20- 29	005	007	005	001																						18
30- 39	003	002																								5
40- 49		002	001																							3
50- 59	002	003	004	001				001																		11
60- 69	003	010	005	005			002																			25
70- 79	007	009	011	018	013	009	007	001																		75
80- 89	006	017	035	051	028	033	017	002	002	001																192
90- 99	009	018	032	042	036	034	018	008	006	001	002															206
100-109	007	023	032	033	028	016	009	004	002																	154
110-119	011	011	022	015	009	004	002																			74
120-129	002	017	022	010	003	001																				55
130-139	011	025	021	009	001																					67
140-149	014	049	014	001																						78
150-159	008	011	010	004	002																					35
160-169	003	012	005	002	001																					23
170-179		003	001																							4
180-189		002																								2
190-199																										0
200-209			001																							1
210-219	002	004			001																					7
220-229	003	004	001																							8
230-239	005	008	004	005																						22
240-249	018	020	021	007	002	001																				69
250-259	015	039	030	020	006	004		001	001																	116
260-269	006	029	025	029	027	018	015	018	012	006	002	006	002													195
270-279	007	012	036	053	045	064	056	080	041	057	043	030	019	009	002	003										557
280-289	008	017	051	069	080	127	117	136	139	156	142	152	085	042	028	007	003									1359
290-299	001	020	033	042	085	101	066	064	088	097	070	082	064	040	016	005	003	001								878
300-309	005	012	023	030	033	023	027	008	012	009	007	004	003	002	002		001									201
310-319	006	015	017	015	010	018	009	004			001															95
320-329	006	008	007	009	008	002	001																			41
330-339	010	007	004		002	001																				24
340-349	002	002	001	002	001																					8
350-359	004	001																								5
		427		474		456		327		327		274		93		15		1		0		0		0		4627
	191		477		421		346		303		267		173		48		7		0		0		0		0	

NUMBER OF ZERO RATES 4


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 015M 8200 51 /73 48
SCALE
10 MILES
N
97
94
91
88
83
80
78
76
73
70
67
64
61
59
57
54

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 11 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 48 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	24.1	.0	162.7	.0
MM	1.9	.3	166.1	79.5
MSF	2.6	-.3	167.7	311.1
2Q1	1.3	.5	169.0	237.5
Q1	.2	.0	61.1	332.0
O1	4.1	-.8	160.8	237.5
NO1	.7	-.3	113.3	199.1
K1	6.7	-.4	169.9	255.8
J1	.6	-.2	94.4	151.9
OO1	.5	.0	145.9	138.0
MNS2	.9	-.2	3.9	5.4
MU2	2.4	.0	160.0	93.0
N2	6.2	-.3	166.4	186.1
M2	31.4	-1.0	164.2	212.9
L2	.4	.0	148.3	146.0
S2	12.4	.1	165.7	233.6
KJ2	.5	.3	145.5	69.5
2SM2	1.5	-.4	164.0	217.0
MO3	1.8	.2	154.8	319.0
M3	.4	.1	48.5	35.0
MK3	1.9	-.4	1.2	77.8
SK3	1.3	-.1	19.8	179.8
MN4	.7	-.1	35.7	344.8
M4	4.4	-.2	3.2	308.7
SN4	.8	-.3	12.9	57.1
MS4	3.0	-.3	14.9	33.9
S4	1.0	.2	44.0	112.0
2MN6	.6	-.1	154.7	39.0
M6	1.1	.3	8.7	252.6
MSN6	.9	-.1	113.4	182.8
2MS6	.7	.1	92.6	83.5
2SM6	.4	.0	95.6	293.9
3MN8	.6	.3	127.2	324.3
M8	.5	.2	84.7	195.6
3MS8	.8	.1	69.6	306.2
M10	1	.1	53.5	200.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT									
-21	-20	-21	-22	-29	-37	-35	-27	-27	-23
MINOR COMPONENT									
6	7	7	7	9	10	10	8	8	7

MAR. 3 1973

MAJOR COMPONENT									
-25	-24	-23	-23	-25	-23	-22	-24	-22	-24
MINOR COMPONENT									
7	7	7	8	7	8	7	8	8	7

MAR. 13 1973

MAJOR COMPONENT									
-17	-23	-24	-24	-26	-32	-32	-25	-22	-20
MINOR COMPONENT									
6	9	7	7	7	9	9	8	7	7

MAR. 23 1973

MAJOR COMPONENT									
-21	-22	-2	-4	-17	-19	-20	-25	-24	-20
MINOR COMPONENT									
7	7	3	0	5	3	5	8	7	7

APR. 2 1973

MAJOR COMPONENT						
-21	-25	-23	-11	-15	-24	-24
MINOR COMPONENT						
8	9	8	6	6	6	8

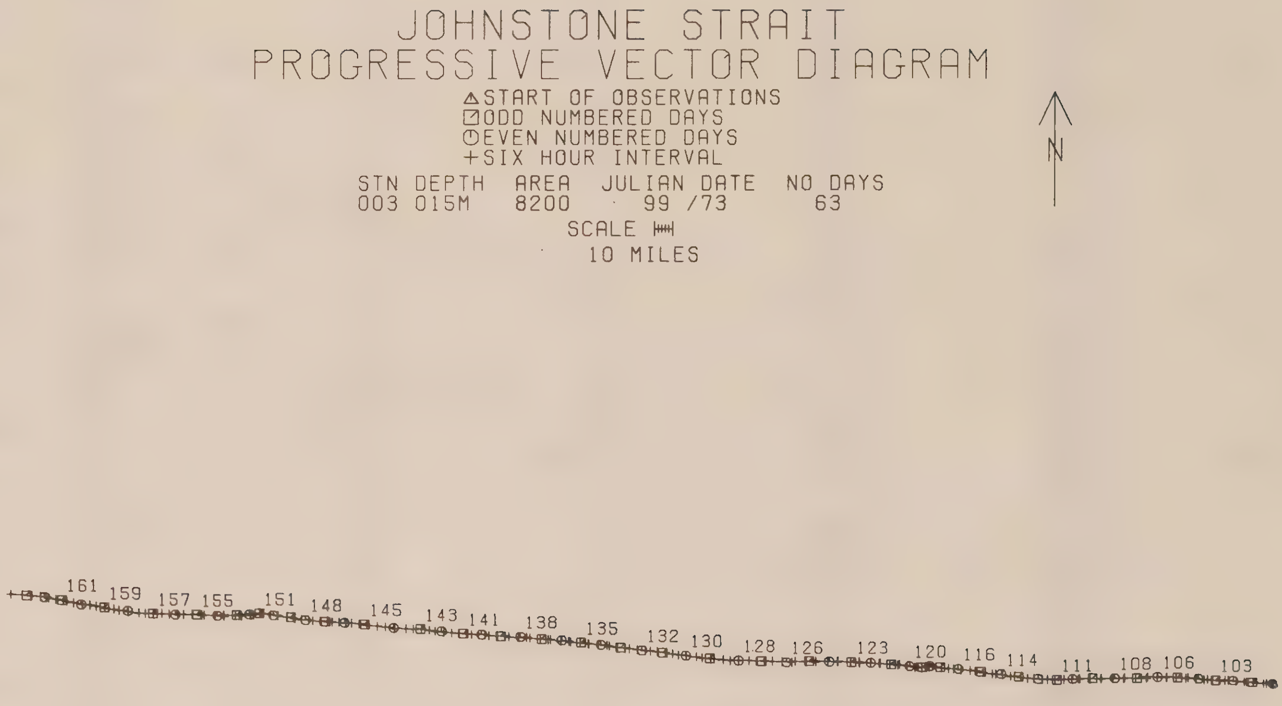
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 64 DAYS
START OF RECORD 30 MN 19 HR 09 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	012	001																							17
10- 19	007	007	006																							20
20- 29	025	019	013	001																						58
30- 39	005	004	003																							12
40- 49	017	011	007																							35
50- 59	004	013	005																							22
60- 69	010	020	006	002	001																					39
70- 79	010	020	013	003	001																					47
80- 89	010	033	014	011	002	001																				71
90- 99	010	032	021	006	011	003	001	001		002	001															88
100-109	010	039	030	009	014	016	007	005	005	006	003	002	002													148
110-119	010	017	025	012	011	008	003	006	006	002	001	002														103
120-129	006	018	017	005	008	004	005	002	003																	68
130-139	017	027	019	011	005	005																				84
140-149	016	039	021	009	005	001																				91
150-159	023	032	012	004																						71
160-169	003	021	006	001																						31
170-179	001	004	001																							6
180-189	001	002																								3
190-199	001	001																								2
200-209	002																									2
210-219	001	001	001	001																						4
220-229		003	004																							7
230-239	012	019	008	004																						43
240-249	020	043	035	015	008	004	002	001	002																	130
250-259	042	095	073	057	050	030	016	010	008	003	002	001	001		001											389
260-269	020	051	090	100	111	144	104	164	187	128	080	033	045	030	007	006										1330
270-279	013	039	058	090	120	170	132	179	194	160	106	115	076	046	024	014	006									1542
280-289	010	050	059	078	085	122	089	098	079	088	058	053	027	017	007	006	002									928
290-299	013	036	050	046	048	029	028	029	026	010	008	003	002	001	001											330
300-309	011	029	031	026	014	014	008	006	003	001																143
310-319	020	029	021	016	004	003	001																			94
320-329	014	020	013	004	003		001																			63
330-339	014	020	008	001	001																					44
340-349	013	016	008		001																					38
350-359	005	011	001	001																						18
		841		513		554		501		499		239		94		26		0		0		0		0		6121
	400		680		503		397		513		259		153		40		8		0		0		0		0	

NUMBER OF ZERO RATES 3


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 015M 8200 99 /73 63
SCALE
10 MILES
N
161 159 157 155 151 148 145 143 141 138 135 132 130 128 126 123 120 116 114 111 108 106 103

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 21 HR 9 DAY 4 MON 73 YR

LENGTH OF DATA 63 DAYS 17 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	23.8	.0	176.0	.0
MM	2.0	-.3	175.5	87.9
MSF	3.9	-1.3	175.1	118.6
2Q1	.5	-.1	138.3	219.7
Q1	1.1	.3	168.4	238.3
O1	3.0	-.1	178.2	252.0
NO1	.9	.4	166.5	272.7
K1	10.7	-.2	175.6	262.9
J1	1.8	.2	152.1	207.6
OO1	1.0	-.3	156.8	244.2
MNS2	.6	.1	22.0	24.1
MU2	3.4	-.6	.5	301.5
N2	5.4	.0	170.6	197.5
M2	25.6	-.8	173.6	220.3
L2	.6	-.5	178.2	283.7
S2	7.4	-.4	171.3	224.3
KJ2	.4	-.2	167.3	146.9
2SM2	.6	.3	7.5	265.4
MO3	1.2	.2	178.2	32.9
M3	1.1	-.5	150.2	318.9
MK3	2.0	.1	176.3	258.4
SK3	.5	.1	125.8	108.0
MN4	1.8	.3	171.6	91.2
M4	2.1	.4	167.4	18.3
SN4	.4	.1	22.3	259.6
MS4	1.1	.3	147.8	223.5
S4	.5	.0	32.2	327.8
2MN6	.9	-.5	162.1	183.2
M6	1.2	-.8	16.2	248.9
MSN6	.3	.1	128.9	44.9
2MS6	.8	-.2	142.4	310.5
2SM6	.3	.1	93.7	63.8
3MN8	.4	-.2	177.8	289.2
M8	.6	.2	154.3	233.8
3MS8	.7	-.1	162.4	90.8
M12	.4	.1	137.4	121.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 10 1973

MAJOR COMPONENT	-24	-23	-20	-21	-25	-24	-26	-27	-27	-23
MINOR COMPONENT	2	2	1	2	1	1	-1	0	-1	0

APR. 20 1973

MAJOR COMPONENT	-20	-24	-23	-21	-24	-27	-21	-10	-9	-17
MINOR COMPONENT	-1	1	3	2	4	3	1	1	-1	1

APR. 30 1973

MAJOR COMPONENT	-22	-25	-24	-27	-26	-27	-30	-29	-34	-28
MINOR COMPONENT	2	2	0	1	1	-1	1	1	2	4

MAY 10 1973

MAJOR COMPONENT	-27	-24	-26	-23	-24	-24	-25	-26	-25	-22
MINOR COMPONENT	4	3	3	4	3	3	2	3	1	2

MAY 20 1973

MAJOR COMPONENT	-22	-27	-25	-32	-33	-24	-22	-24	-17	-20
MINOR COMPONENT	1	3	3	2	4	2	1	2	3	3

MAY 30 1973

MAJOR COMPONENT	-16	-13	-18	-23	-26	-26	-27	-30	-27	-28
MINOR COMPONENT	2	-1	-1	0	2	0	1	3	4	4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 015 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

JUNE 9 1973

MAJOR COMPONENT

-23	-20	-22

MINOR COMPONENT

5	4	2

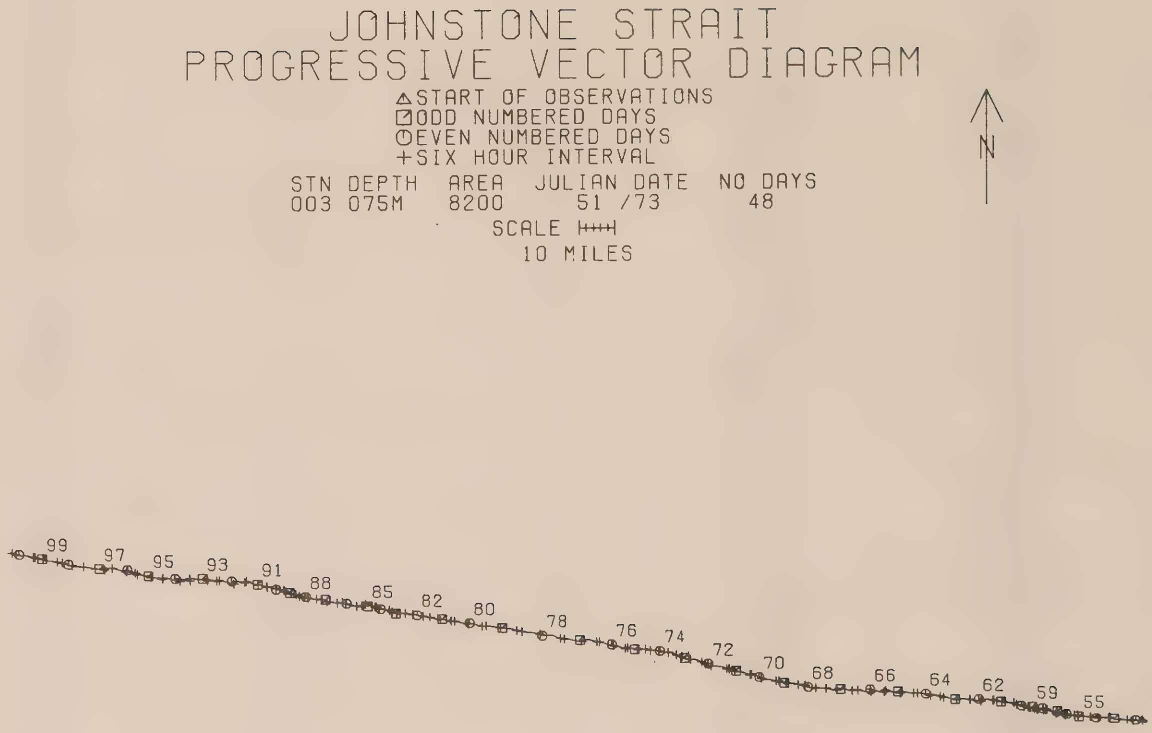
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 003 DEPTH 075 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 49 DAYS
START OF RECORD 30 MN 13 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	007	020	005	003	001																					36
10- 19	017	018	004		001																					40
20- 29	009	039	008	001																						57
30- 39	003	012	003	001																						19
40- 49	010	023	007	005																						45
50- 59	012	031	009	002																						54
60- 69	006	019	022	002																						49
70- 79	009	033	028	007	001																					78
80- 89	014	037	026	016	006	001																				100
90- 99	009	035	035	021	008	005	002	001																		116
100-109	010	043	034	026	018	011	005	005	002																	154
110-119	011	039	063	031	015	018	006	004	001	001																189
120-129	011	024	036	019	021	008	005	001	001	001																127
130-139	010	028	037	012	005	003	003	001																		99
140-149	007	031	016	011	003	003																				71
150-159	008	032	014	004	001																					59
160-169	012	012	010	003																						37
170-179	013	019	004	004																						40
180-189	011	012	006	002																						31
190-199	007	016	003	002																						28
200-209	011	018	010	002	001																					42
210-219	008	017	001																							26
220-229	013	014	007	001	001	001																				37
230-239	011	021	012	011	001	001		001																		58
240-249	010	032	022	011	006	006	002	001	002																	92
250-259	013	028	026	020	023	015	013	010	004	006																158
260-269	012	039	048	026	045	054	057	051	038	019	013	002	002	001												407
270-279	011	050	038	051	064	086	089	112	097	065	026	017	013	011												730
280-289	014	035	046	071	073	102	083	118	100	047	034	021	006	005												755
290-299	015	044	052	056	043	073	047	046	033	022	008	005	005	001												450
300-309	011	032	045	026	026	025	016	003	004	003																191
310-319	009	037	028	016	014	005	002																			111
320-329	012	022	017	008		001		001																		61
330-339	009	019	013	007	002																					50
340-349	011	027	015	003																						56
350-359	006	018	005	002	002																					33
		976		483		418		355		164		45		18		0		0		0		0		0		4686
	372		755		381		330		282		81		26		0		0		0		0		0		0	

NUMBER OF ZERO RATES 2


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 075M 8200 51 /73 48
SCALE
10 MILES
N
99
97
95
93
91
88
85
82
80
78
76
74
72
70
68
66
64
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59
55

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 075 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 15 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 48 DAYS 18 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	14.6	.0	171.1	.0
MM	3.5	-.1	165.2	35.5
MSF	4.0	.3	3.0	202.8
2Q1	1.0	-.3	146.1	206.9
Q1	.5	-.2	50.7	85.5
O1	2.9	.2	176.7	267.3
NO1	.4	.0	8.0	159.3
K1	7.4	-.1	170.9	274.6
J1	.5	.0	69.6	180.4
OO1	.9	-.2	24.2	231.8
MNS2	.6	.1	140.2	190.7
MU2	2.7	-1.0	160.8	81.3
N2	4.3	-.1	163.1	190.5
M2	23.8	.5	169.0	217.4
L2	.5	-.2	14.6	58.8
S2	9.3	.2	165.8	236.2
KJ2	.9	-.5	153.4	113.3
2SM2	.8	.0	154.2	144.4
MO3	1.6	.5	43.4	341.1
M3	.6	.0	14.1	57.3
MK3	.8	-.1	42.1	272.5
SK3	1.0	-.4	168.9	232.1
MN4	1.3	-.1	111.7	274.2
M4	2.5	-1.2	42.0	282.1
SN4	.2	-.1	153.6	130.4
MS4	.9	-.1	106.5	344.7
S4	.7	-.6	143.0	101.5
2MN6	.4	.2	58.0	142.2
M6	.6	.5	24.0	80.0
MSN6	.9	-.1	99.3	336.0
2MS6	.9	.1	145.9	301.7
2SM6	.7	-.2	116.0	44.6
3MN8	.5	-.2	173.5	85.5
M8	.5	.0	44.9	354.3
3MS8	.7	.0	173.8	224.4
M12	.2	.0	20.3	219.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 075 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973									
MAJOR COMPONENT									
-13	-10	-9	-6	-5	-8	-6	-7	-13	-14
MINOR COMPONENT									
1	1	1	1	1	2	1	1	3	1
MAR. 3 1973									
MAJOR COMPONENT									
-15	-18	-18	-17	-19	-19	-14	-15	-13	-16
MINOR COMPONENT									
0	3	1	2	1	2	2	4	4	4
MAR. 13 1973									
MAJOR COMPONENT									
-15	-14	-14	-15	-20	-25	-24	-20	-16	-16
MINOR COMPONENT									
4	4	1	3	3	4	4	3	3	2
MAR. 23 1973									
MAJOR COMPONENT									
-12	-8	-8	-12	-12	-11	-9	-9	-11	-15
MINOR COMPONENT									
1	3	1	2	2	1	3	2	3	1
APR. 2 1973									
MAJOR COMPONENT									
-18	-17	-17	-14	-17	-19	-15	-13		
MINOR COMPONENT									
2	0	2	3	1	3	4	2		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

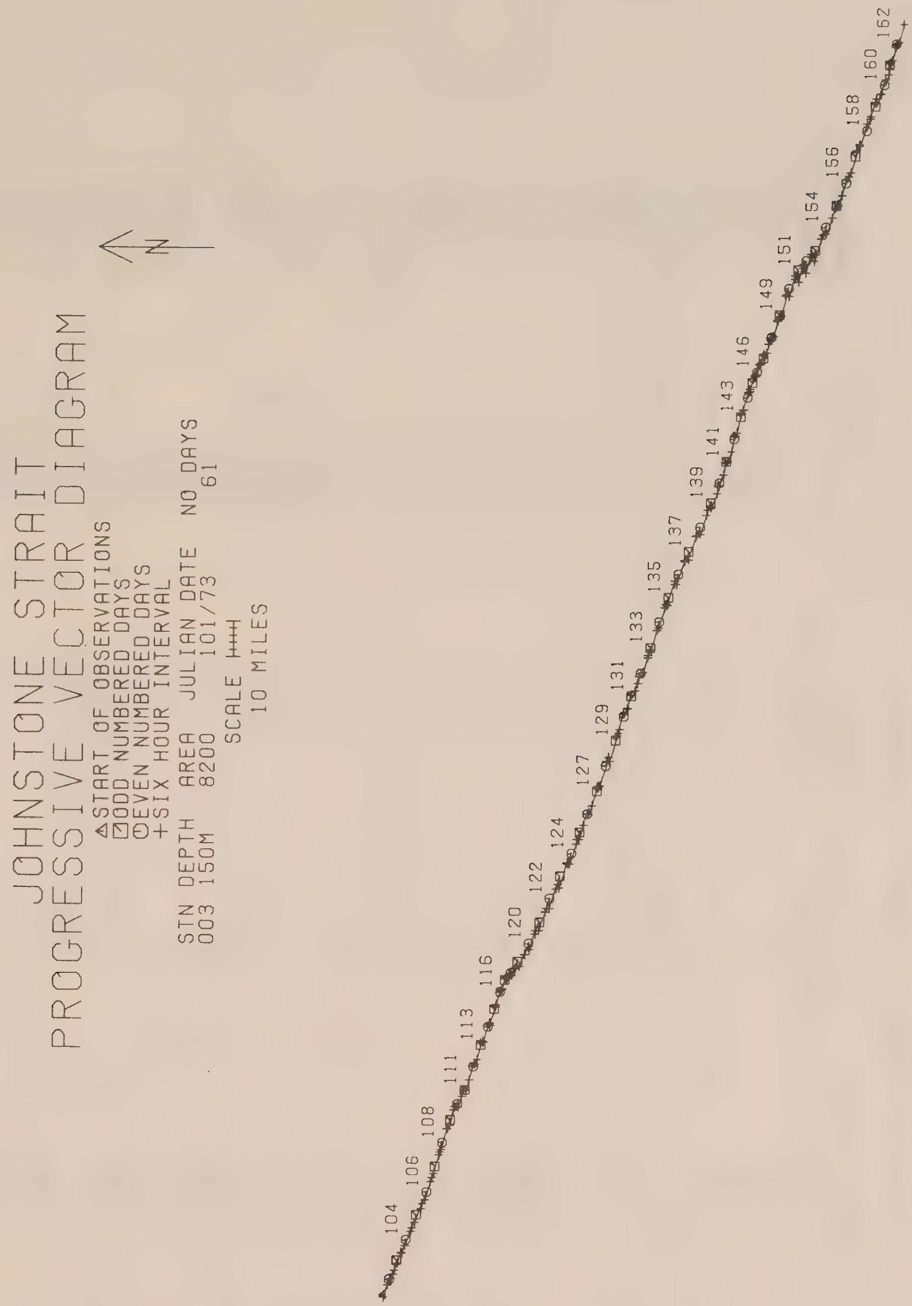
STN 003 DEPTH 150 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 62 DAYS

START OF RECORD 15 MN 10 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	008	013	006	005																						32
10- 19	007	007	006	002																						22
20- 29	010	015	002	001																						28
30- 39	001	004																								5
40- 49	009	006	007	001																						23
50- 59	012	017	003	002																						34
60- 69	008	016	006	003	001	001																				35
70- 79	008	010	010	001	002																					31
80- 89	007	024	025	010	007	003	004	002	001																	83
90- 99	009	034	048	043	037	046	024	019	010	012	010	012	005	003	005		001									318
100-109	019	051	077	108	110	131	117	118	149	125	101	108	090	064	082	054	045	030	028	021	011	004	002			1645
110-119	012	032	066	073	070	076	072	072	066	046	056	041	024	025	019	029	028	018	005	005	005					840
120-129	008	033	056	043	024	023	010	008	006	003																214
130-139	009	027	024	007	004	004	001	001																		77
140-149	008	024	011				001																			44
150-159	006	015	007																							28
160-169	009	018	006																							33
170-179	003	007	004																							14
180-189	004	008	006																							18
190-199	004	007	005																							16
200-209	003	007	003																							13
210-219	003	005	008	003																						19
220-229	007	006	008	003	001																					25
230-239	006	011	016	007	005	001																				46
240-249	006	021	029	017	011	004																				88
250-259	010	017	036	026	021	008	004	001	001																	124
260-269	013	020	051	073	060	049	032	025	009	010																342
270-279	014	028	076	100	106	120	084	049	029	012	002															620
280-289	008	029	072	105	096	091	059	028	019	007	002															516
290-299	009	029	052	042	041	024	022	011	001	001																232
300-309	015	021	036	027	010	003																				112
310-319	013	022	018	003	002																					58
320-329	008	021	016	007	001																					53
330-339	004	008	017																							29
340-349	010	013	009	002																						34
350-359	015	009	008	001																						33
	305	635	330	715	609	504	430	334	291	216	171	161	119	92	106	83	74	48	33	26	16	4	2	0	0	5834

NUMBER OF ZERO RATES 0


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 150M 8200 101/73 61
SCALE
10 MILES
N
104
106
108
111
113
116
120
122
124
127
129
131
133
135
137
139
141
143
146
149
151
154
156
158
160
162

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 150 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 12 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 61 DAYS 6 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	13.3	.0	157.9	180.0
MM	2.2	.4	165.3	263.8
MSF	1.6	.5	156.7	239.6
2Q1	1.0	.2	152.4	99.2
Q1	1.0	.1	142.3	206.2
O1	7.6	.6	164.7	213.9
NO1	.7	.0	2.0	28.6
K1	15.3	1.2	169.2	209.8
J1	1.0	.0	158.7	281.4
OO1	1.2	.2	159.6	157.5
MNS2	1.2	.0	172.8	210.5
MU2	2.9	.3	167.7	78.6
N2	8.3	.2	165.5	211.0
M2	40.2	1.1	165.5	225.7
L2	1.7	.4	162.8	223.4
S2	9.2	.0	166.9	235.5
KJ2	.5	.1	4.3	92.1
2SM2	.6	-.1	139.9	181.4
MO3	1.5	-.5	163.6	325.0
M3	.7	-.1	152.0	275.5
MK3	2.3	-.8	139.3	229.6
SK3	1.0	-.1	145.3	.9
MN4	1.2	.1	169.8	345.4
M4	2.2	-.1	133.7	275.8
SN4	.9	.1	165.0	91.9
MS4	2.2	-.4	143.7	33.4
S4	.2	.0	179.5	174.4
2MN6	.7	.1	8.1	335.8
M6	1.1	.5	161.4	50.0
MSN6	.7	.1	156.9	225.3
2MS6	1.6	.2	146.4	172.7
2SM6	.7	-.3	153.2	326.2
3MN8	.4	.2	111.4	325.4
M8	.2	.1	148.2	311.4
3MS8	.4	.1	160.8	329.4
M12	.2	.1	84.2	211.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 150 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973									
MAJOR COMPONENT									
10	10	13	12	15	15	15	12	10	15
MINOR COMPONENT									
-4	-4	-5	-6	-5	-5	-4	-4	-5	-5
APR. 22 1973									
MAJOR COMPONENT									
15	12	11	10	8	3	5	8	12	12
MINOR COMPONENT									
-5	-5	-4	-3	-3	-3	-4	-6	-6	-6
MAY 2 1973									
MAJOR COMPONENT									
13	14	14	14	16	16	17	14	12	12
MINOR COMPONENT									
-6	-7	-5	-5	-6	-6	-6	-5	-5	-5
MAY 12 1973									
MAJOR COMPONENT									
13	15	12	13	13	15	15	14	13	16
MINOR COMPONENT									
-5	-5	-5	-6	-6	-7	-6	-6	-4	-5
MAY 22 1973									
MAJOR COMPONENT									
13	14	11	7	7	11	12	14	9	6
MINOR COMPONENT									
-4	-4	-4	-3	-4	-4	-5	-5	-5	-5
JUNE 1 1973									
MAJOR COMPONENT									
5	13	16	16	18	17	16	13	11	11
MINOR COMPONENT									
-6	-6	-8	-5	-6	-6	-6	-6	-3	-1

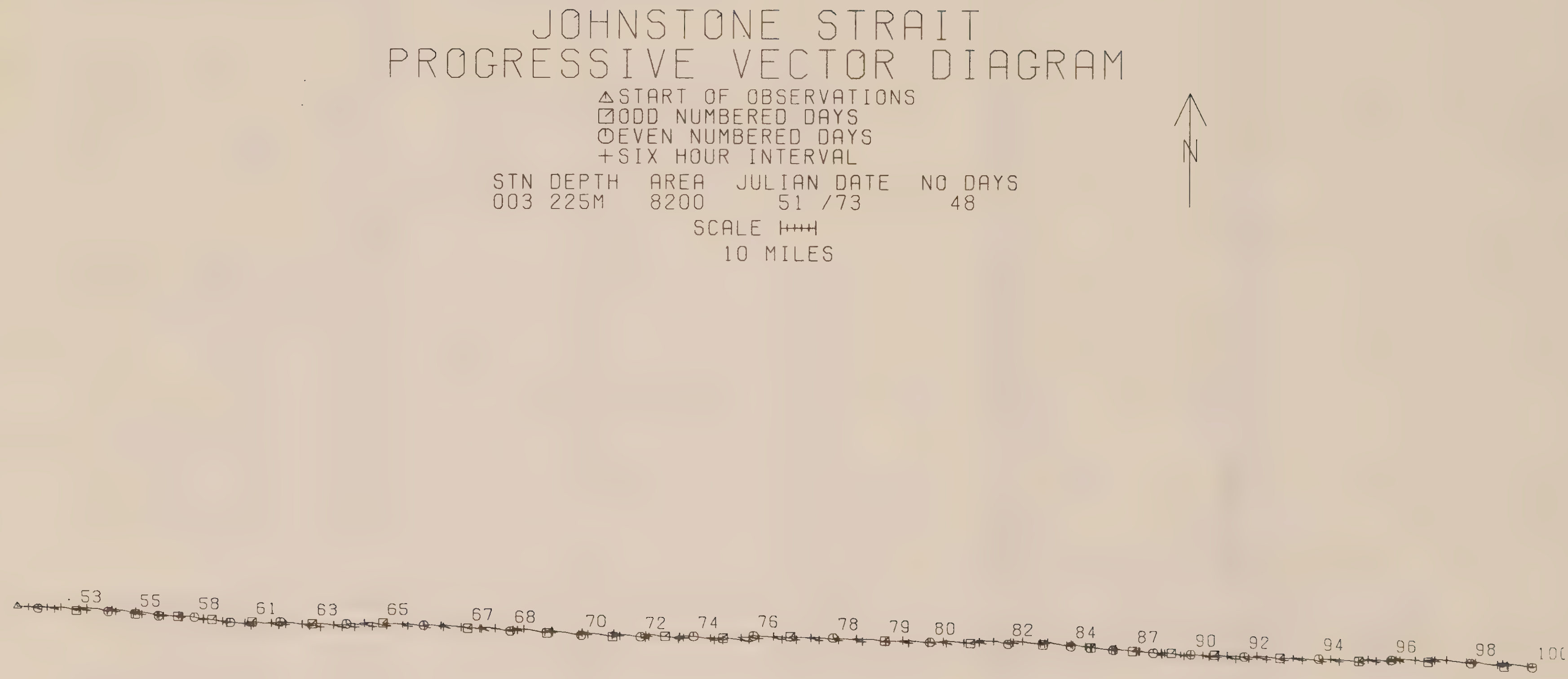
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 003 DEPTH 225 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 49 DAYS
START OF RECORD 30 MN 13 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	004																								7
10- 19	007	006	001																							14
20- 29	007	004																								11
30- 39	002	006																								8
40- 49	004	009																								13
50- 59	015	016	002	001																						34
60- 69	004	019	005	001	004		001																			34
70- 79	012	014	024	009	010	011	006	003	002	002																93
80- 89	010	027	045	035	039	042	029	025	019	016	013	011	009	007	004	001	002	002								336
90- 99	009	024	031	053	068	082	059	063	086	083	067	090	099	061	096	106	075	102	083	042	009					1388
100-109	014	023	034	034	045	038	052	049	058	055	051	055	049	040	027	033	024	021	008	003	004					717
110-119	005	020	021	016	023	010	006	007	012	009	004	008	002													143
120-129	004	014	009	004	003	003		002	001																	40
130-139	007	007	009	003																						26
140-149	003	007	001	001																						12
150-159	004	004																								8
160-169	006	004	001																							11
170-179	007	004	001																							12
180-189	004	002	001																							7
190-199	009	005	001																							15
200-209	004	002																								6
210-219	009	007	002																							18
220-229	004	003	002																							9
230-239	006	005	001																							12
240-249	006	008	001																							15
250-259	009	016	004	002	002	001		001																		35
260-269	011	017	013	012	004	003																				60
270-279	014	023	040	036	041	041	028	028	026	013	002	002														294
280-289	009	025	033	038	071	080	081	076	074	060	033	003	001													584
290-299	014	026	028	051	040	067	043	037	037	025	008															376
300-309	012	016	026	025	031	013	007	007	005	002																144
310-319	012	020	017	024	010	007	003	001																		94
320-329	004	007	010	004	001																					26
330-339	012	012	006	002	001																					33
340-349	012	011	003	001		002																				23
350-359	002	009	001	001																						13
	276	426	373	353	393	400	315	299	320	265	178	169	160	108	127	140	101	125	91	45	13	0	0	0	0	4677

NUMBER OF ZERO RATES 11


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 225M 8200 51 /73 48
SCALE
10 MILES
N
53
55
58
61
63
65
67
68
70
72
74
76
78
79
80
82
84
87
90
92
94
96
98

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 225 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 15 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 48 DAYS 18 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	19.0	.0	178.1	180.0
MM	3.1	.0	3.5	48.3
MSF	4.1	-.1	5.2	22.5
2Q1	.8	.3	172.7	123.1
Q1	1.7	-.1	167.9	173.4
O1	10.9	-.4	170.9	196.8
NO1	.4	.0	4.2	.9
K1	14.1	-.2	170.2	208.6
J1	.6	-.2	23.5	28.9
OO1	.9	-.2	168.8	295.2
MNS2	.8	.1	168.0	12.3
MU2	2.6	-.3	167.5	60.7
N2	7.3	-.4	169.1	197.9
M2	50.1	-2.9	170.3	222.2
L2	1.4	-.3	166.9	226.3
S2	16.9	-1.2	168.7	234.3
KJ2	1.1	-.4	163.8	78.3
2SM2	1.1	.0	165.7	263.5
MO3	2.0	.3	169.9	136.0
M3	.8	-.2	169.4	85.1
MK3	.6	.0	140.5	317.3
SK3	.4	.1	6.4	290.9
MN4	.5	.4	127.3	48.9
M4	2.1	.3	134.4	13.9
SN4	.6	-.1	115.3	95.0
MS4	1.6	-.2	112.7	64.5
S4	.2	.1	59.6	86.0
2MN6	1.1	-.5	20.1	18.6
M6	1.9	-.7	17.2	349.3
MSN6	.7	-.1	27.7	122.7
2MS6	1.7	-.4	21.6	59.9
2SM6	.4	-.2	159.3	331.0
3MN8	.2	.0	41.1	218.8
M8	.6	-.3	52.2	170.9
3MS8	.5	-.1	38.6	224.5
M12	.2	-.1	146.8	316.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 225 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973										
MAJOR COMPONENT	23	20	18	15	13	11	12	12	14	16
MINOR COMPONENT	-1	-1	-2	-1	-1	-1	-1	-2	0	0
MAR. 3 1973										
MAJOR COMPONENT	18	19	21	23	25	24	22	23	21	19
MINOR COMPONENT	-1	0	0	-1	-1	-1	-2	-2	-1	-1
MAR. 13 1973										
MAJOR COMPONENT	16	18	18	18	21	24	29	25	24	22
MINOR COMPONENT	0	0	0	2	-1	-1	-1	-1	0	0
MAR. 23 1973										
MAJOR COMPONENT	21	18	13	15	13	13	12	12	14	17
MINOR COMPONENT	-1	-1	-1	-2	-1	-1	0	0	0	-1
APR. 2 1973										
MAJOR COMPONENT	20	22	23	18	21	25	21	20		
MINOR COMPONENT	-1	-1	-1	1	-1	-1	-2	-1		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

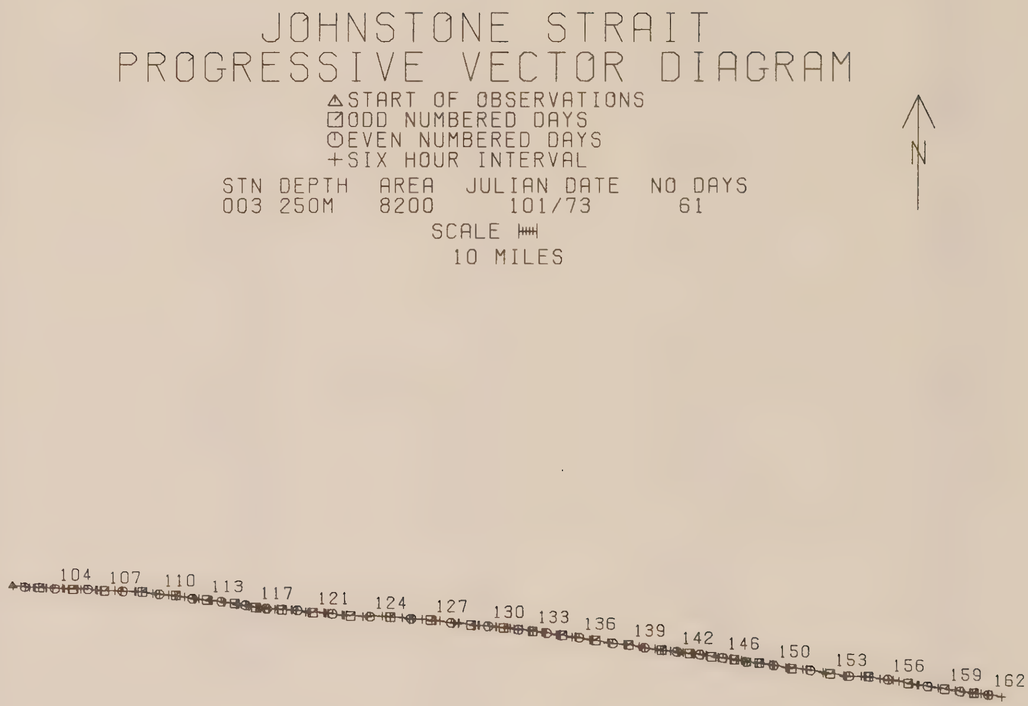
STN 003 DEPTH 250 JOHNSTONE ST 50 28.3 N 126 8.1 W LENGTH OF RECORD= 62 DAYS

START OF RECORD 15 MN 10 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001	006	002																							9
10- 19	007	005																								12
20- 29	002	005																								7
30- 39	004	006	002																							12
40- 49	001	003	004																							8
50- 59		004	004																							8
60- 69	013	013	004	003	002																					35
70- 79	008	016	013	006	009	008	004	004	004	006		001	001													80
80- 89	010	025	028	034	033	050	051	047	047	038	029	026	025	014	012	014	008	006	011	011	005	003	001			528
90- 99	012	026	040	052	078	098	102	099	127	129	103	145	125	090	105	071	049	043	030	033	030	008	001			1596
100-109	013	025	050	063	070	082	061	073	072	071	046	050	044	032	022	033	042	044	049	024	020	009		001		996
110-119	021	037	042	035	029	012	005	003	004	002	005	001	002			001	001	002	003	002		001				208
120-129	017	011	025	015	005	001													001							75
130-139	009	022	007	004																						42
140-149	017	014	006																							37
150-159	020	017	003																							40
160-169	011	006																								17
170-179	014	009	003																							26
180-189	015	005	001																							21
190-199	018	007	001																							26
200-209	016	011	005																							32
210-219	013	012	002																							27
220-229	011	017	003																							31
230-239	013	014	009	001																						37
240-249	007	031	014	007																						59
250-259	006	032	030	014	007	002	002	001																		94
260-269	003	025	056	050	063	042	033	026	007	004																309
270-279	.	024	060	079	106	095	125	089	048	014	002															642
280-289	001	024	047	055	081	096	072	071	030	017	009	002														505
290-299	005	014	041	032	035	026	026	009	004	002		001														195
300-309	001	016	025	019	011	006	003																			81
310-319	002	011	012	008	003	001																				37
320-329	001	006	008	003	001																					19
330-339	004	006	003	001																						14
340-349	005	004	002																							11
350-359	002	003	002																							7
	303	512	554	481	533	519	484	422	343	283	194	226	197	136	139	119	100	95	94	70	55	21	2	1	0	5993

NUMBER OF ZERO RATES 9


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 250M 8200 101/73 61
SCALE
10 MILES
N
104 107 110 113 117 121 124 127 130 133 136 139 142 146 150 153 156 159 162

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 250 JOHNSTONE ST 50 28.3 N 126 8.1 W

STARTING TIME OF ANALYSED DATA 0 MIN 12 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 61 DAYS 6 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	19.4	.0	173.5	180.0
MM	3.0	.0	178.8	220.2
MSF	4.1	-.2	174.9	235.7
2Q1	1.5	.0	.3	281.9
Q1	1.2	.1	179.5	209.0
O1	9.8	-.5	174.0	200.6
NO1	.4	-.1	2.2	226.1
K1	18.0	-.7	172.6	185.8
J1	.5	-.3	176.6	205.4
OO1	.7	.0	174.1	150.1
MNS2	.8	.3	3.4	21.4
MU2	2.9	-.4	169.5	80.8
N2	10.4	-.6	172.7	200.8
M2	46.9	-2.1	172.9	219.9
L2	2.5	-.2	177.0	253.3
S2	9.9	-.4	173.0	227.7
KJ2	1.2	.3	172.8	319.0
2SM2	.6	.1	.7	7.2
MO3	1.9	.0	8.3	91.2
M3	.8	.0	168.3	115.4
MK3	2.4	-.3	14.3	260.4
SK3	.3	-.1	8.1	22.2
MN4	.8	-.1	152.1	72.8
M4	1.4	-.4	152.3	7.7
SN4	.6	-.1	149.8	224.2
MS4	.6	-.3	174.6	188.9
S4	.5	-.2	160.3	79.0
2MN6	.8	-.1	22.8	262.7
M6	1.2	-.5	14.6	205.4
MSN6	.8	-.2	177.1	179.7
2MS6	1.0	-.4	1.0	359.1
2SM6	.3	.0	21.2	262.4
3MN8	.5	-.3	171.6	132.9
M8	.7	.1	179.6	59.0
3MS8	.6	-.1	41.6	49.1
M12	.2	.0	128.1	32.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 003 DEPTH 250 JOHNSTONE ST 50 28.3 N 126 8.1 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973										
MAJOR COMPONENT	15	16	19	17	19	22	25	23	22	22
MINOR COMPONENT	-1	0	0	0	-2	-1	-1	-3	-2	-4
APR. 22 1973										
MAJOR COMPONENT	19	18	17	13	12	11	16	17	17	21
MINOR COMPONENT	-2	-2	-2	-2	-2	-1	-1	-1	-2	-1
MAY 2 1973										
MAJOR COMPONENT	20	23	26	27	26	27	26	21	19	17
MINOR COMPONENT	-2	-2	0	-2	-2	-4	-3	-1	-2	-2
MAY 12 1973										
MAJOR COMPONENT	15	14	17	19	19	21	21	19	22	21
MINOR COMPONENT	-1	-2	-3	-3	-3	-4	-2	-4	-3	-3
MAY 22 1973										
MAJOR COMPONENT	16	14	16	14	14	14	13	15	19	20
MINOR COMPONENT	-2	-2	-2	-2	-2	-2	-1	-2	-4	-2
JUNE 1 1973										
MAJOR COMPONENT	23	23	25	26	27	25	23	19	16	16
MINOR COMPONENT	-4	-4	0	-4	-4	-4	-3	-3	-2	-3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

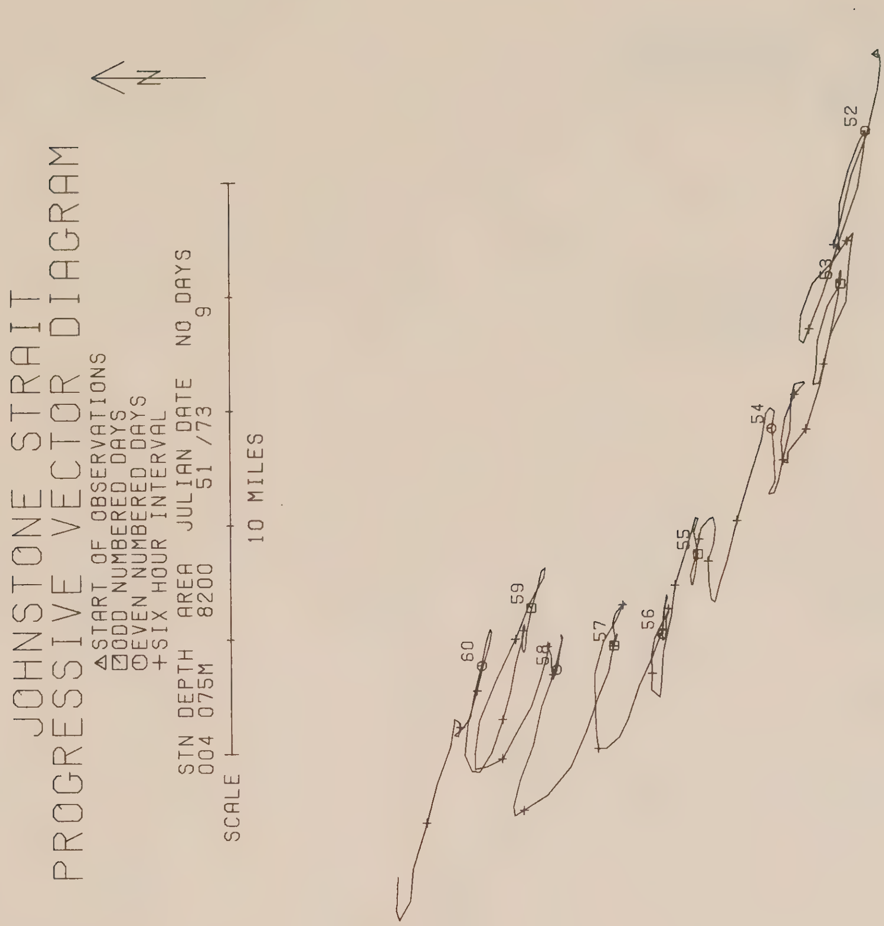
STN 004 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 8.2 W LENGTH OF RECORD= 10 DAYS

START OF RECORD 30 MN 17 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	004	002																							9
10- 19	003		001																							4
20- 29	003	003	003																							9
30- 39	001	003																								4
40- 49	002	009																								11
50- 59	001	007	002																							10
60- 69	006	005	003	001																						15
70- 79	003	015	009	004	002	001																				34
80- 89	002	007	011	008	009	003	003	001	002																	46
90- 99	002	010	013	011	010	005	007	006	001																	65
100-109	004	008	011	009	009	006	011	005	001																	64
110-119	002	012	013	010	008	008	005	009	001	001																69
120-129	003	005	004	003	003	003	006	001	001																	29
130-139	003	002	001			001																				7
140-149		002		002		001																				5
150-159	001	003	001		001																					6
160-169	003	003																								6
170-179	001	001																								2
180-189	001	001																								2
190-199	002	002																								4
200-209	002	001																								3
210-219	002		002																							4
220-229	001																									1
230-239	002		001																							3
240-249	004	001	001	001																						7
250-259	007	003	004	002																						16
260-269	004	009	009	004	006	008	001																			41
270-279	002	014	013	015	011	015	002	003	001			001														77
280-289	003	012	010	011	019	022	019	020	013	004	002	001														136
290-299	001	008	008	009	009	020	014	011	007	002			001													90
300-309	002	009	006	004	002	001	003	002																		29
310-319	005	006	003	002	001	001	001																			19
320-329	001	001	001	007			002																			12
330-339	005	003	002	003		001																				14
340-349	004	009	003		002																					18
350-359	002	006		002																						10
	93	184	137	108	92	96	74	58	27	7	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	881

NUMBER OF ZERO RATES 4


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
□ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 075M 8200 51 /73 9
SCALE
10 MILES
N
52
53
54
55
56
57
58
59
60

TIDAL CURRENT ELLIPSE

STN 604 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 9.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 19 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 9 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	3.7	.0	149.4	.0
M1	9.0	-.9	161.2	259.9
M2	27.7	-1.9	165.5	228.0
M3	1.4	-.4	63.6	15.8
M4	.2	-.4	59.1	223.5
M6	1.8	-.6	67.3	140.5
M8	.5	-.1	129.0	153.6
M12	.3	.3	92.7	105.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT	-5	-4	-3	-3	0	-3	1	-2
MINOR COMPONENT	0	2	3	1	2	3	1	1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

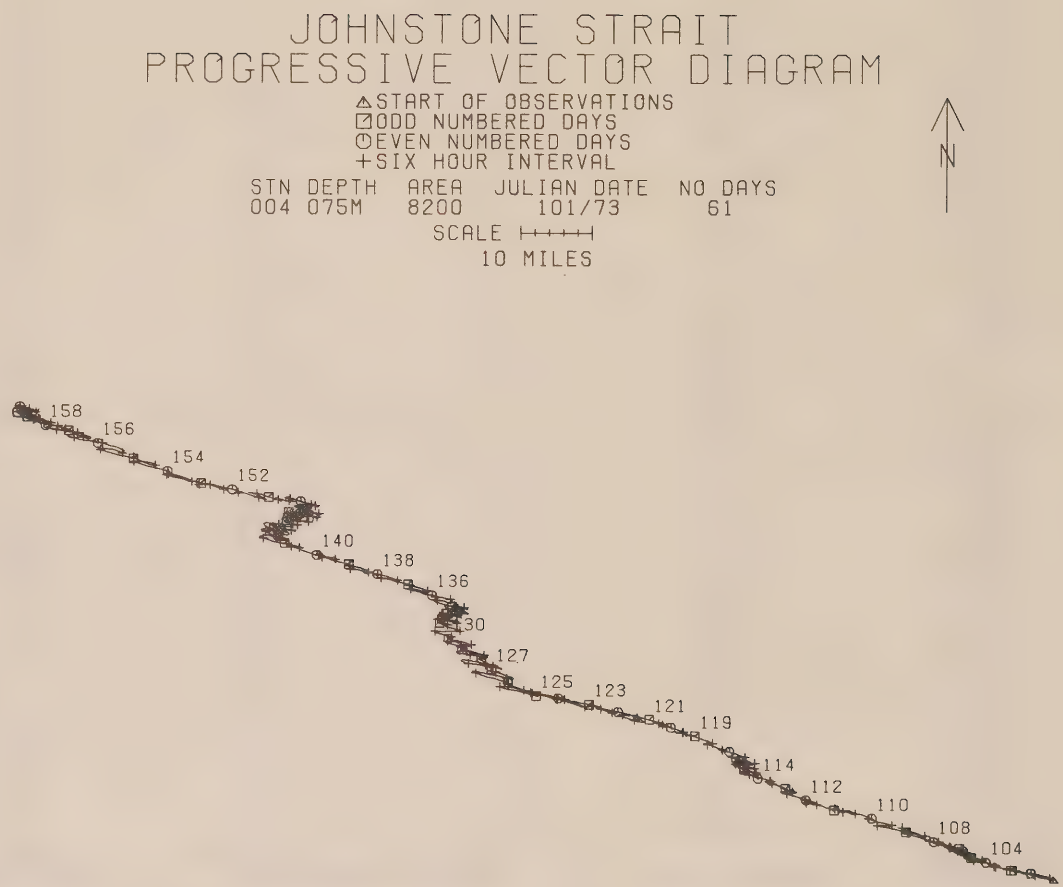
STN 004 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 8.2 W LENGTH OF RECORD= 62 DAYS

START OF RECORD 15 MN 11 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	010	016	006																							32
10- 19	008	027	005	001																						41
20- 29	015	026	020	001	001																					63
30- 39	001	013	008	002																						24
40- 49	013	024	015	005	001	001																				59
50- 59	013	027	037	014	009	001																				101
60- 69	002	020	033	020	018	016	003		001																	113
70- 79	010	025	044	034	043	036	013	005	006	002	001															219
80- 89	009	033	042	047	041	045	023	020	013	005	001	001		001												281
90- 99	007	024	040	047	055	051	045	041	017	014	005	001	003	003	001	003	002	003								362
100-109	007	023	047	036	054	059	039	040	025	023	013	011	007	008	005	004	003	001								405
110-119	011	034	036	045	044	049	040	024	027	022	006	005	002	002	002	002	001									352
120-129	007	036	027	026	018	016	013	012	006	001	002															164
130-139	011	024	023	016	004	003	004	003																		88
140-149	006	018	019	005	006	001	001																			56
150-159	008	019	017	004		001																				49
160-169	008	018	012		001	001																				40
170-179	008	013	008	003	001																					33
180-189	004	017	006	001																						28
190-199	012	011	002																							25
200-209	004	015	006																							25
210-219	006	018	003																							27
220-229	008	010	003	002																						23
230-239	008	020	005	001																						34
240-249	010	020	013	005																						48
250-259	018	024	023	016	006	006	001																			94
260-269	018	036	042	033	028	022	011	007	001	003	001															202
270-279	012	038	065	074	084	089	084	054	040	024	023	011	004	002												604
280-289	024	049	076	079	147	150	150	176	126	086	041	032	008	004	001											1149
290-299	009	059	070	062	063	075	070	094	056	042	019	011	005	003	001											639
300-309	019	033	040	022	028	017	013	005	004	005	005															191
310-319	009	025	021	021	006	002	002	003	002		001															91
320-329	011	025	014	006	005	002	001	001																		65
330-339	010	026	023	004																						63
340-349	007	019	007	002																						35
350-359	011	020	006																							37
	353	895	864	634	663	643	513	485	324	227	118	72	29	23	10	9	6	4	0	0	0	0	0	0	0	5867

NUMBER OF ZERO RATES 8


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
□ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 075M 8200 101/73 61
SCALE
10 MILES
N
158
156
154
152
140
138
136
130
127
125
123
121
119
114
112
110
108
104

TIDAL CURRENT ELLIPSE

STN 004 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 13 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 61 DAYS 1 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	5.7	.0	155.8	.0
MM	.9	-.1	170.9	22.1
MSF	4.5	-.4	171.4	36.0
2Q1	.8	-.3	147.4	136.3
Q1	1.3	-.2	172.7	161.2
O1	4.4	-.3	167.9	194.2
NO1	1.0	.3	140.7	111.7
K1	10.4	-.1	169.2	229.1
J1	1.3	.2	152.3	217.8
OO1	.9	-.3	175.5	270.4
MNS2	2.2	-.5	174.6	270.6
MU2	4.0	-.5	164.3	89.9
N2	7.6	-.1	165.6	204.2
M2	31.6	.1	166.5	224.4
L2	.9	.1	165.3	270.0
S2	6.7	-.1	165.2	227.5
KJ2	.5	.0	138.6	177.2
2SM2	.8	-.3	158.3	274.9
MO3	1.0	-.9	156.8	45.2
M3	.3	-.1	143.0	332.7
MK3	1.0	-.1	53.1	337.5
SK3	.3	.1	68.6	194.7
MN4	1.3	.2	161.2	341.5
M4	1.3	-.1	174.2	233.8
SN4	.5	.3	5.4	318.5
MS4	.7	-.3	25.7	206.4
S4	.6	-.1	164.7	257.4
2MN6	1.2	-.1	6.1	61.4
M6	1.1	-.5	23.1	332.6
MSN6	.5	.0	144.0	55.9
2MS6	1.3	-.5	143.1	357.2
2SM6	.6	-.2	1.5	297.3
3MN8	.4	-.4	171.6	103.2
M8	.3	-.2	32.7	138.3
3MS8	.6	-.3	124.2	187.5
M12	.3	.1	156.9	320.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 075 JOHNSTONE ST 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973										
MAJOR COMPONENT	-7	-9	-7	-4	-3	-6	-8	-10	-10	-9
MINOR COMPONENT	1	2	3	2	1	2	4	3	3	3
APR. 22 1973										
MAJOR COMPONENT	-5	-6	-4	-1	0	-3	-10	-9	-7	-11
MINOR COMPONENT	3	3	2	1	2	2	4	3	3	3
MAY 2 1973										
MAJOR COMPONENT	-9	-10	-8	-7	-4	-1	-3	-4	-3	-1
MINOR COMPONENT	3	3	2	3	4	2	3	3	4	2
MAY 12 1973										
MAJOR COMPONENT	0	1	-1	-7	-8	-10	-8	-9	-10	-3
MINOR COMPONENT	2	1	1	3	4	3	3	3	3	2
MAY 22 1973										
MAJOR COMPONENT	2	3	2	3	-1	3	1	-1	-11	-12
MINOR COMPONENT	2	0	2	1	2	0	1	2	2	2
JUNE 1 1973										
MAJOR COMPONENT	-12	-10	-10	-9	-8	-4	-4	-3	0	-1
MINOR COMPONENT	2	3	5	4	3	1	2	1	0	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

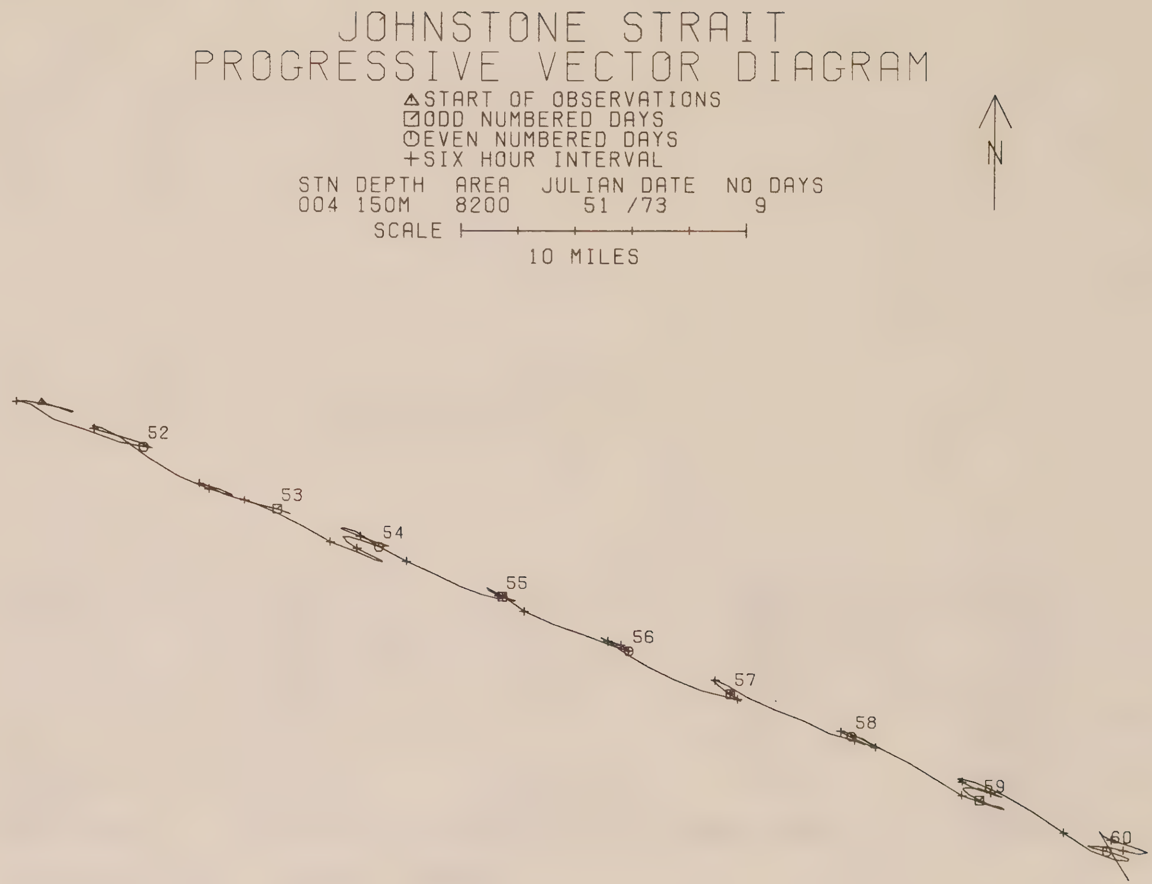
STN 004 DEPTH 150 JOHNSTONE ST. 50 28.0 N 126 8.2 W LENGTH OF RECORD= 10 DAYS

START OF RECORD 20 MN 17 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001	002																								3
10- 19																										0
20- 29	001																									1
30- 39																										0
40- 49	002																									2
50- 59	001			001																						2
60- 69	002	004																								6
70- 79	003	003	001	001																						8
80- 89	007	006	008	005	003	003		002																		34
90- 99	003	015	003	009	007	009	003	002	001	003	001	001														57
100-109	011	013	009	015	020	013	015	016	019	011	009	009	007	004												171
110-119	008	006	004	011	012	014	009	008	012	020	021	033	021	002												181
120-129	006	006	006	003	003	004	003	004	012	012	012	017	011	010												109
130-139	001	001		001	001			001	001	003	002	002	001	001												15
140-149	002				001				001			003														7
150-159												001														1
160-169		001								001	002	001														5
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
240-249																										0
250-259		001		001																						2
260-269	001		001		001																					3
270-279	003		001	001	002		005	001																		13
280-289	004	010	011	019	020	038	015	009	005																	131
290-299	019	030	013	018	029	021	007	005	001																	143
300-309	011	015	026	006	005	002																				65
310-319	007	010	008	011																						36
320-329	008	012	004																							24
330-339	005	001	001																							7
340-349		003		001																						4
350-359	002																									2
	108	139	96	103	104	104	57	48	52	50	47	67	40	17	0	0	0	0	0	0	0	0	0	0	0	1032

NUMBER OF ZERO RATES 298


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊖EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 150M 8200 51 /73 9
SCALE
10 MILES
N
52
53
54
55
56
57
58
59
60

TIDAL CURRENT ELLIPSE

STN 004 DEPTH 150 JOHNSTONE ST. 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 19 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 9 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	9.6	.0	157.5	180.0
K1	13.9	.7	153.3	210.2
M2	30.4	.7	156.7	226.9
M3	3.3	.3	120.0	332.5
M4	1.5	1.2	131.1	166.3
M6	2.5	1.0	163.0	70.6
M8	.9	-.7	126.0	263.7
M12	.5	-.1	160.8	40.5

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 150 JOHNSTONE ST. 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT	14	12	11	10	8	9	8	8
MINOR COMPONENT	-6	-5	-4	-4	-4	-3	-4	-3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

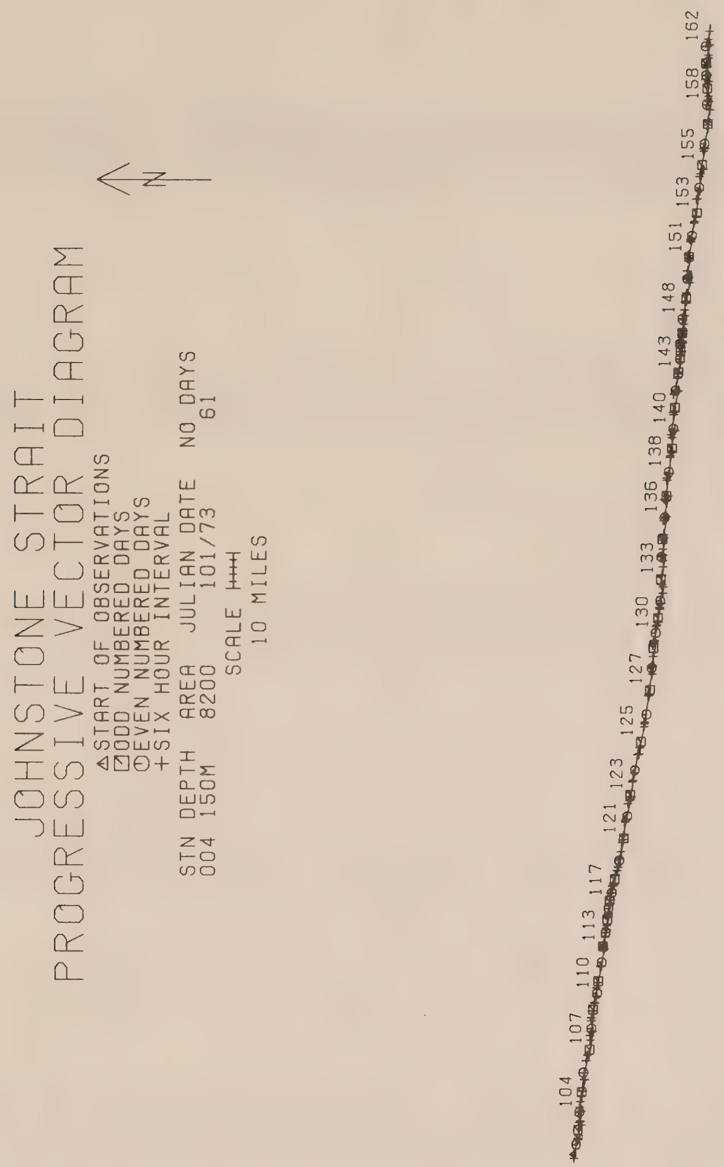
STN 004 DEPTH 150 JOHNSTONE ST 50 28.0 N 126 8.2 W LENGTH OF RECORD= 62 DAYS

START OF RECORD 15 MN 11 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	015	010	001	001																					31
10- 19	009	032	008	003	001																					53
20- 29	001	007	002		002																					12
30- 39	007	014	007	003																						31
40- 49	007	012	008	005	002																					34
50- 59	008	022	011	005	001	001																				48
60- 69	007	019	013	009	006	002																				55
70- 79	006	012	028	013	013	005	002	003																		82
80- 89	006	018	031	027	051	037	024	015	010	006	002															231
90- 99	010	026	033	053	077	087	090	073	070	057	046	048	037	021	030	025	029	010	008	004	007	002	002			845
100-109	008	030	050	077	076	100	102	114	114	105	088	103	092	058	073	058	060	034	035	010	013	005	001			1406
110-119	004	029	045	049	046	031	029	027	030	018	011	010	006	001	002		002	002	001							343
120-129	007	016	019	017	009	004	006																			78
130-139	010	016	015	007	001	001																				50
140-149	010	011	005	001																						27
150-159	007	011	005																							23
160-169	007	006	005																							18
170-179	004	005	001																							10
180-189	003	003	002																							8
190-199	003	005	001																							9
200-209	003	004	002																							9
210-219	003	009	001																							13
220-229	006	007	006	001																						20
230-239	005	014	006	001																						26
240-249	005	008	011	004	003	001																				32
250-259	002	011	008	011	006	005	002		001																	46
260-269	006	019	023	015	027	025	026	010	006	002																159
270-279	008	021	040	058	075	102	094	064	045	010																517
280-289	006	026	057	058	101	129	148	129	080	026																760
290-299	011	030	048	065	050	063	074	061	039	010	004															455
300-309	006	026	030	029	020	017	011	005	004	001																149
310-319	005	023	023	009	010	005	002																			77
320-329	012	018	021	011	007	001	002																			72
330-339	015	020	024	008	003	001																				71
340-349	005	014	006	003																						28
350-359	006	019	010	002	002																					39
		577		545		617		505		235		161		80		83		46		14		7		0		5367
	232		615		590		612		399		151		135		105		91		44		20		3		0	

NUMBER OF ZERO RATES 3


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 150M 8200 101/73 61
SCALE
10 MILES
N
104
107
110
113
117
121
123
125
127
130
133
136
138
140
143
148
151
153
155
158
162

TIDAL CURRENT ELLIPSE

STN 004 DEPTH 150 JOHNSTONE ST 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 13 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 61 DAYS 1 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	11.1	.0	173.0	180.0
MM	1.8	.4	173.3	218.0
MSF	2.5	.0	167.6	226.8
2Q1	1.1	.1	165.8	50.3
Q1	1.0	.1	166.9	194.0
O1	8.1	.3	169.8	200.4
NO1	.8	-.1	168.8	215.6
K1	15.4	.9	170.5	196.3
J1	.6	.0	2.7	119.9
OO1	1.3	.2	153.3	139.1
MNS2	1.0	.1	2.8	35.3
MU2	2.5	.2	176.3	82.6
N2	9.2	.4	168.0	204.2
M2	44.2	1.0	167.1	222.3
L2	1.4	.2	171.3	234.4
S2	9.9	.2	167.7	231.1
KJ2	.4	-.2	16.7	122.5
2SM2	.7	-.1	149.2	213.0
MO3	.7	-.3	162.5	350.0
M3	.6	-.3	47.6	64.1
MK3	1.6	.2	148.6	308.1
SK3	.7	.0	152.5	89.6
MN4	.9	.1	174.0	46.6
M4	1.7	.3	147.4	5.1
SN4	.9	-.2	1.7	.2
MS4	1.6	-.1	152.3	112.7
S4	.4	.3	179.7	205.5
2MN6	.5	-.1	2.4	64.1
M6	.8	.0	26.4	318.1
MSN6	.4	-.2	128.8	321.6
2MS6	1.2	.0	157.0	269.3
2SM6	.2	-.1	38.7	179.3
3MN8	.7	.2	71.7	3.6
M8	.6	.0	92.0	340.1
3MS8	.6	.2	117.1	113.4
M12	.2	.1	10.2	172.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 150 JOHNSTONE ST 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973	MAJOR COMPONENT	8	8	9	10	11	12	12	10	9	13
	MINOR COMPONENT	-2	0	0	-1	-1	-2	-1	-2	-1	-2
APR. 22 1973	MAJOR COMPONENT	12	10	10	8	4	4	7	10	11	11
	MINOR COMPONENT	-2	-2	-2	-1	0	-1	-2	-3	-2	-1
MAY 2 1973	MAJOR COMPONENT	11	13	16	17	19	17	15	11	10	9
	MINOR COMPONENT	-2	-3	-3	-4	-2	-2	-1	-2	-2	-2
MAY 12 1973	MAJOR COMPONENT	11	12	9	12	11	13	14	12	14	14
	MINOR COMPONENT	0	-1	0	-1	-1	-1	-2	-1	-1	-2
MAY 22 1973	MAJOR COMPONENT	11	11	8	6	6	8	10	11	10	10
	MINOR COMPONENT	0	-1	-2	0	-1	0	-1	-1	0	-1
JUNE 1 1973	MAJOR COMPONENT	11	14	14	15	16	14	12	9	7	10
	MINOR COMPONENT	-2	-2	-2	-2	-2	-1	0	0	0	0

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

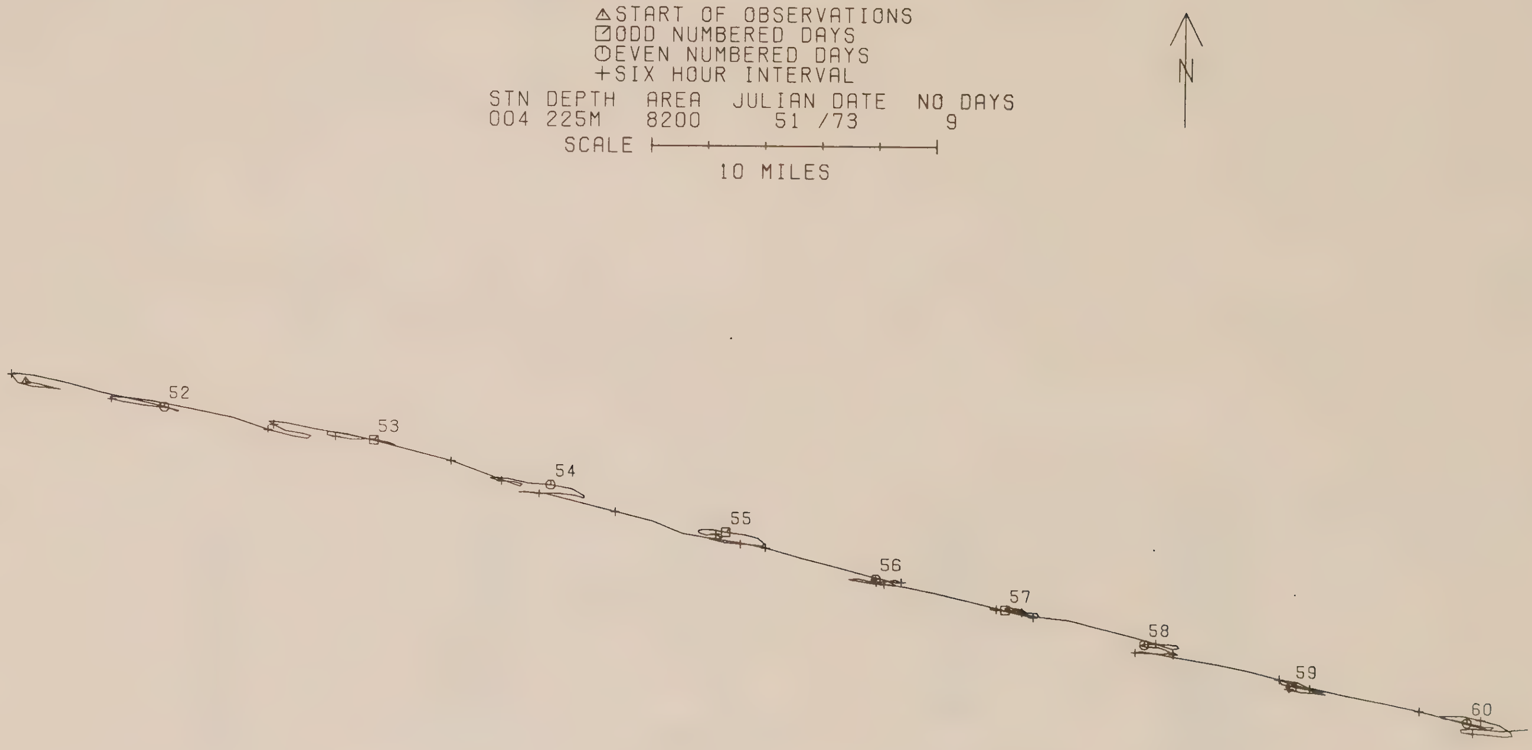
STN 004 DEPTH 225 JOHNSTONE ST 50 28.0 N 126 8.2 W LENGTH OF RECORD= 10 DAYS
START OF RECORD 30 MN 17 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	004																								9
10- 19	003	001																								4
20- 29	002	006																								8
30- 39	002	001																								3
40- 49	001	004																								5
50- 59	002	006	001																							9
60- 69	004	005	003																							12
70- 79	004	004	006	004	001																					19
80- 89	002	005	009	010	004	003	002	001	003		001	001	002	001												44
90- 99	001	004	011	013	010	010	012	009	005	008	005	010	004	004	004											110
100-109		008	009	005	010	015	016	020	020	019	012	023	026	019	018	004										224
110-119	003	009	006	006	005	006	001	002	001	002	002	003	002	003												51
120-129	001	003	002	002	002	002																				12
130-139	002	003	001	001	002	002																				11
140-149	001		003																							4
150-159		001																								1
160-169		002																								2
170-179																										0
180-189	002																									2
190-199		001																								1
200-209	003																									3
210-219																										0
220-229	002	001																								3
230-239	002	001																								3
240-249	001		001																							2
250-259	001	005	004	007																						17
260-269	001	003	010	012	010	003	001	003																		43
270-279	001	006	017	021	025	016	015	006	003																	110
280-289	002	009	015	019	014	019	009	006	001																	94
290-299	001	003	007	004	003	001																				19
300-309	002	004	005		001	002																				14
310-319	001	006	002			001																				10
320-329		004	001	001	001																					7
330-339	003	004		001																						8
340-349	005	006		001																						12
350-359	002	002																								4
	62	121	113	107	88	90	56	47	33	29	20	37	34	27	22	4	0	0	0	0	0	0	0	0	0	880

NUMBER OF ZERO RATES 5

JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM



TIDAL CURRENT ELLIPSE

STN 004 DEPTH 225 JOHNSTONE ST 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 19 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 9 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	12.6	.0	166.9	180.0
K1	15.8	.8	169.9	206.4
M2	36.9	-1.8	167.9	223.9
M3	1.4	-.2	61.4	6.9
M4	1.6	-.2	49.7	205.5
M6	1.4	.3	58.1	299.6
M8	.5	.1	61.9	15.0
M12	.5	-.2	31.4	242.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 225 JOHNSTONE ST 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT							
20	17	16	14	10	9	9	11
MINOR COMPONENT							
-4	-4	-4	-4	-3	-2	-3	-2

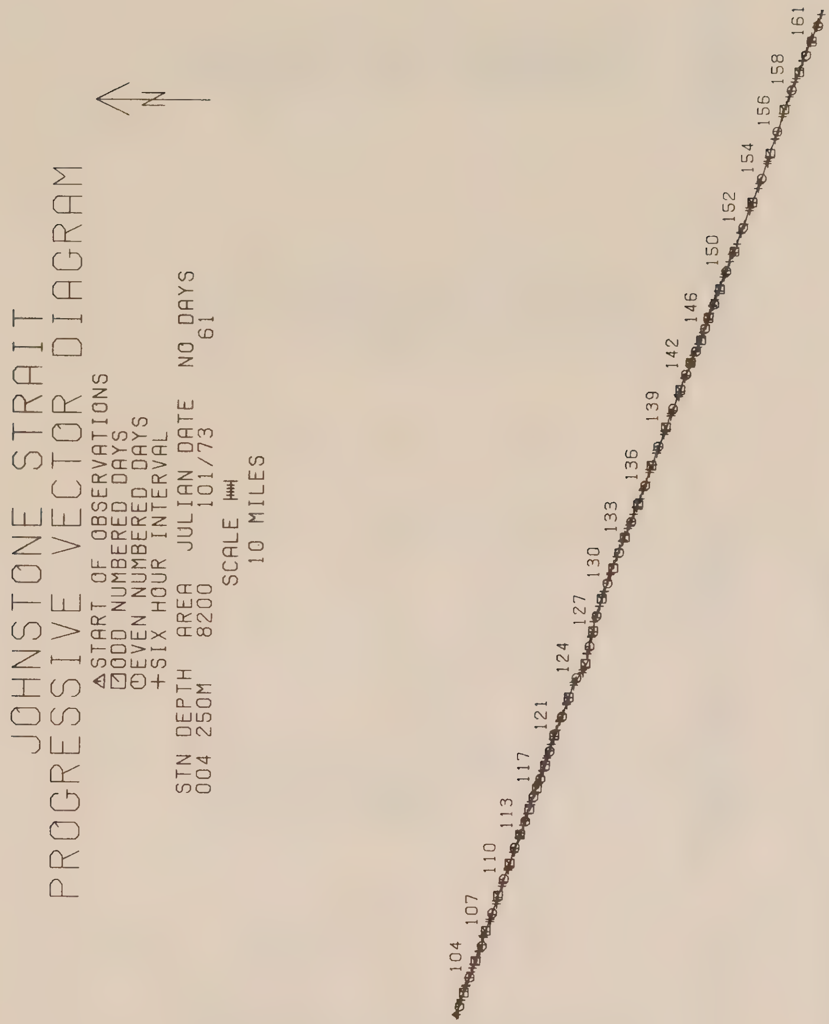
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 004 DEPTH 250 JOHNSTONE ST 50 28.0 N 126 8.2 W LENGTH OF RECORD= 62 DAYS
START OF RECORD 15 MN 11 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	008	009																								17
10- 19	009	008																								17
20- 29	013	005	003																							21
30- 39	005	003	002		001																					11
40- 49	006	013	006																							25
50- 59	013	010	005																							28
60- 69	008	023	011	002																						44
70- 79	013	023	015	005	002			001						004	007		001									71
80- 89	017	030	036	025	020	011	003	004	003	004	003	002	004	006	006	003	005					001				183
90- 99	015	025	037	042	051	050	032	027	030	035	024	019	031	014	015	014	005	009	003	006	002	001	003	001		491
100-109	004	028	052	061	086	087	101	085	105	115	099	134	128	097	137	094	070	070	040	041	031	021	021	009	003	1719
110-119	009	023	024	037	041	047	044	054	056	053	053	054	052	047	039	044	043	032	022	027	012	008	006	012	005	844
120-129	009	018	017	014	011	012	004	002	002	007	001	002	006	003	003		005	002						001		119
130-139	005	012	007	002	001								001	003												31
140-149	008	008	002										001	001												20
150-159	008	004																								12
160-169	002	003	001																							6
170-179	010	003																								13
180-189	001	004																								5
190-199	003																									3
200-209	008	002	001																							11
210-219	011	001	002																							14
220-229	008	009	001																							18
230-239	008	009	003	002																						22
240-249	012	014	019	011	003	001																				60
250-259	012	033	040	035	026	016	005	002	001																	170
260-269	021	044	047	063	061	072	074	041	022	006	003	002														456
270-279	017	042	052	070	091	098	116	103	073	030	004	002			001											699
280-289	014	031	030	047	050	071	055	061	033	025	005															422
290-299	021	022	021	010	015	018	012	004	005	003																131
300-309	011	023	013	006	003	001																				57
310-319	006	015	007	002	002																					32
320-329	006	008	007	002																						23
330-339	007	011	001	001																						20
340-349	016	005	006																							[illegible]
350-359	006	008		001																						15
	350	529	468	430	464	[illegible]	446	384	330	278	192	215	223	175	208	155	129	113	65	74	45	31	30	23	8	[illegible]

NUMBER OF ZERO RATES 11 NUMBER OF RATES IN EXCESS OF MAXIMUM 2


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 250M 8200 101/73 61
SCALE
10 MILES
N
104
107
110
113
117
121
124
127
130
133
136
139
142
146
150
152
154
156
158
161

TIDAL CURRENT ELLIPSE

STN 004 DEPTH 250 JOHNSTONE ST. 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 00 MIN 13 HR 11 DAY 04 MON 73 YR

LENGTH OF DATA 60 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	21.0	.0	160.3	180.0
Q1	1.1	-.2	167.8	216.8
O1	8.5	.1	162.3	201.7
NO1	.6	-.3	168.4	298.8
K1	16.8	.1	165.3	180.3
J1	.3	-.2	168.6	290.7
OO1	1.4	-.3	179.2	155.1
MU2	3.7	-.3	160.4	101.3
N2	10.3	-.5	165.0	202.4
M2	50.7	-1.3	166.6	218.1
L2	2.7	-.4	169.9	31.3
S2	10.3	-.1	165.3	217.8
MN4	.9	.4	23.9	223.6
M4	2.0	-.5	72.1	258.3
MS4	1.6	-.6	158.3	134.6
M6	1.6	.2	174.4	239.1
M8	.5	-.1	149.1	161.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 250 JOHNSTONE ST 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 12 1973	MAJOR COMPONENT	15	16	17	15	17	19	21	21	20	22
	MINOR COMPONENT	-5	-6	-6	-7	-4	-8	-8	-7	-7	-7
APR. 22 1973	MAJOR COMPONENT	19	18	17	15	12	10	14	16	17	19
	MINOR COMPONENT	-7	-6	-6	-5	-5	-4	-5	-5	-5	-7
MAY 2 1973	MAJOR COMPONENT	19	23	15	22	22	22	24	21	19	19
	MINOR COMPONENT	-8	-9	-11	-5	-5	-5	-8	-7	-7	-7
MAY 12 1973	MAJOR COMPONENT	17	17	18	20	21	23	23	23	23	22
	MINOR COMPONENT	-6	-7	-7	-8	-8	-8	-9	-8	-9	-7
MAY 22 1973	MAJOR COMPONENT	17	15	16	15	14	17	17	18	21	24
	MINOR COMPONENT	-7	-6	-7	-5	-5	-6	-6	-6	-9	-9
JUNE 1 1973	MAJOR COMPONENT	27	27	30	29	31	27	26	22	18	17
	MINOR COMPONENT	-11	-10	-11	-9	-9	-9	-10	-8	-7	-7

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

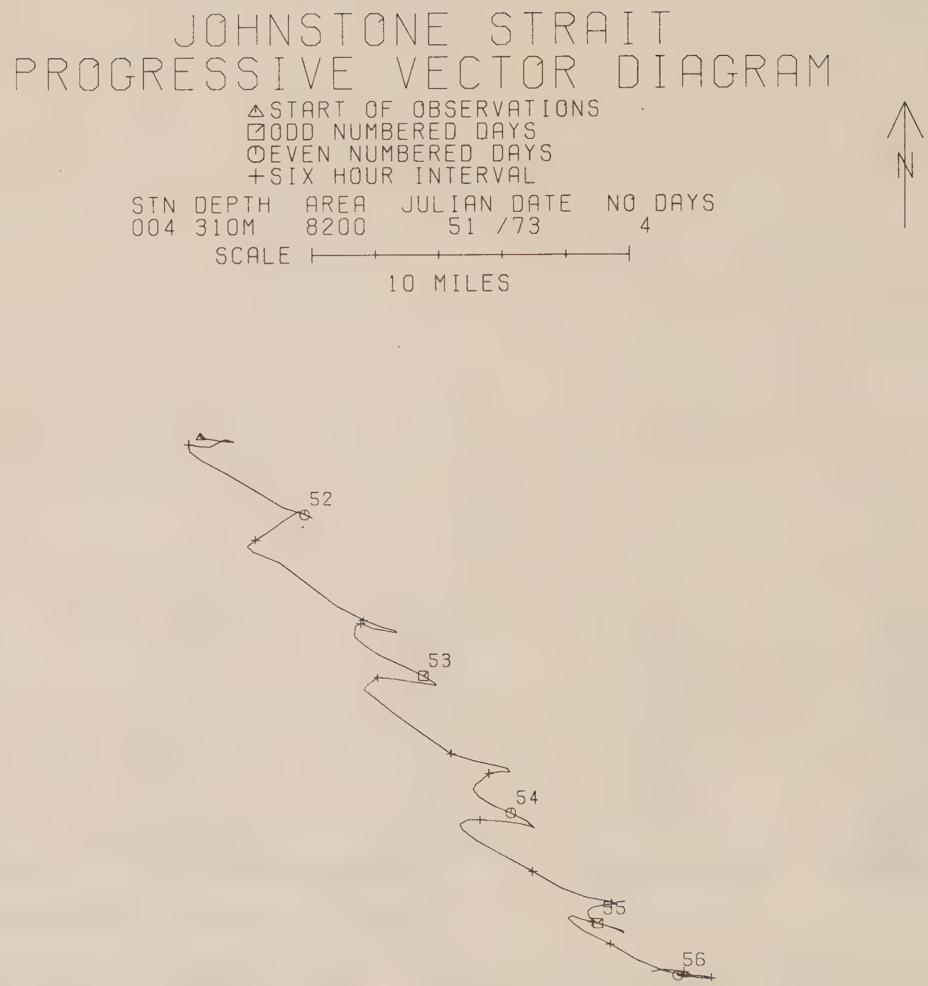
STN 004 DEPTH 310 JOHNSTONE ST. 50 28.0 N 126 8.2 W LENGTH OF RECORD= 5 DAYS

START OF RECORD 20 MN 17 HR 20 DY 02 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001																									1
10- 19	003																									3
20- 29																										0
30- 39																										0
40- 49																										0
50- 59																										0
60- 69																										0
70- 79	001	005																								6
80- 89	002	002	004		002																					10
90- 99		006		008	005	010	002	001	002	001	001															36
100-109	001	003	002	006	009	007	010	004	002	005																49
110-119		004	001	003	009	006	009	012	020	008	006	009	001	001												89
120-129		006	005	005	010	013	010	001	005	010	014	015	006													100
130-139		002	001	005	010	002	001				001	001	003													26
140-149	001	004	006	003	004				001																	19
150-159	003	004	004	002	002																					15
160-169	002																									2
170-179	001	002	001																							4
180-189	004	001		002	002																					9
190-199	002	003	001																							6
200-209	001	002	004	001																						8
210-219	002	003	005	002	001	003	001																			17
220-229		007	005	007	004	001	003	002																		29
230-239		002	003	003	002		001	002																		13
240-249	002	004	004	002	002		001	001																		16
250-259	002	003	005	009	007																					26
260-269	002		003	011	004	004	003																			27
270-279		004	003	014	012	007	017																			57
280-289		005	002	015	016	007	002																			47
290-299		002	005	009	007		001																			24
300-309	004	003	004	004	003	003	001	002																		24
310-319	001	001	001																							3
320-329		001																								1
330-339		001		001																						2
340-349	002	001																								3
350-359																										0
	37	81	69	112	111	63	62	25	30	24	22	25	10	1	0	0	0	0	0	0	0	0	0	0	0	672

NUMBER OF ZERO RATES 41


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 310M 8200 51 /73 4
SCALE
10 MILES
N
52
53
54
55
56

TIDAL CURRENT ELLIPSE

STN 004 DEPTH 310 JOHNSTONE ST. 50 28.0 N 126 8.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 19 HR 20 DAY 2 MON 73 YR

LENGTH OF DATA 4 DAYS 20 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	10.6	.0	131.6	180.0
K1	12.4	1.5	159.5	180.8
M2	32.1	4.6	161.3	212.9
M3	1.6	-.5	31.3	73.0
M4	3.1	-.2	101.6	269.6
M6	1.4	-.4	160.8	250.4
M8	.8	.0	60.3	320.8
M12	1.6	-.2	4.5	120.8

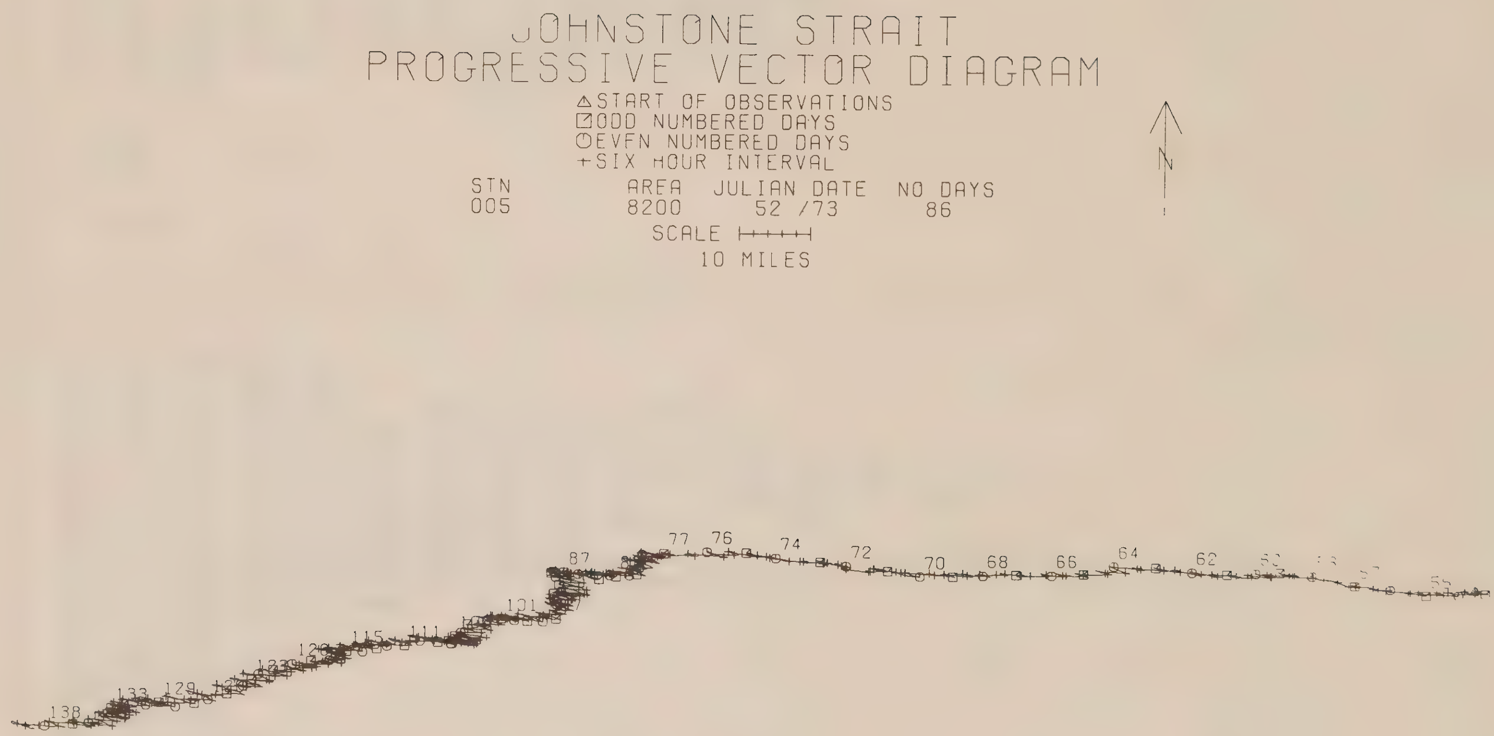
DAILY RESIDUALS (CM/SEC/DAY)

STATION 004 DEPTH 310 JOHNSTONE ST. 50 28.0 N 126 8.2 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 21 1973

MAJOR COMPONENT	12	9	8	7
MINOR COMPONENT	-12	-10	-9	-5

APPENDIX


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN 005
AREA 8200
JULIAN DATE 52 /73
NO DAYS 86
SCALE
10 MILES
N
77
76
74
72
70
68
66
64
62
87
121
115
111
129
133
138

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

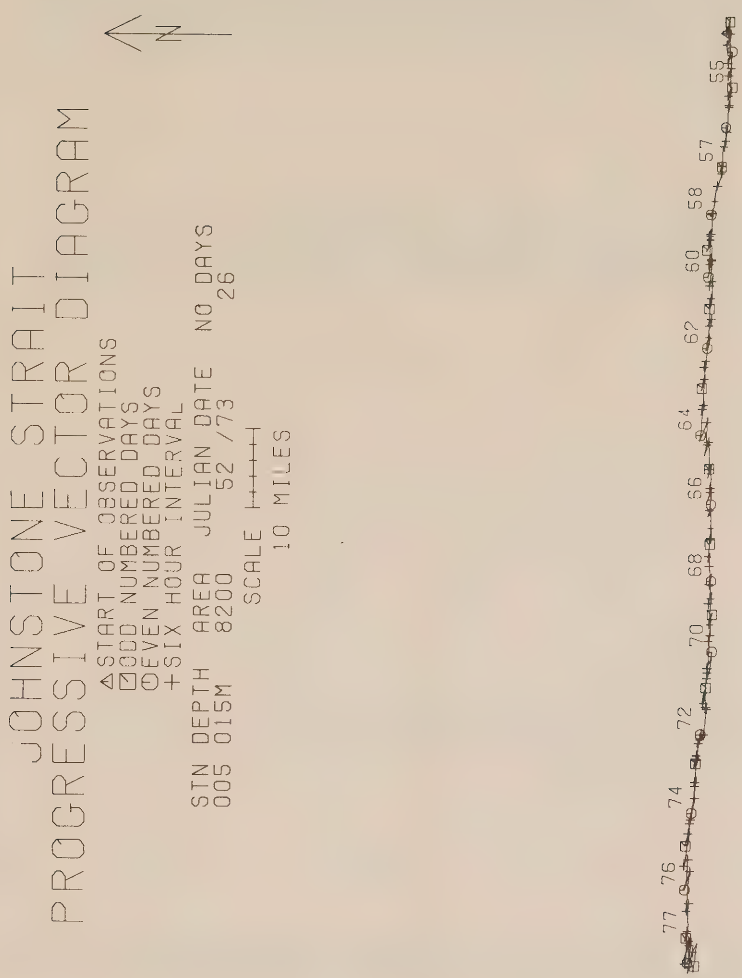
STN 005 DEPTH 015 JOHNSTONE ST. 50 27.7 N 126 8.3 W LENGTH OF RECORD= 27 DAYS

START OF RECORD 0 MN 13 HR 21 DY 2 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001	006	004																							11
10- 19	005	011	003	002																						21
20- 29	005	007	002																							14
30- 39	002	001	001																							4
40- 49	003	005	002	001																						11
50- 59	008	011	003																							22
60- 69	003	011	004	003	002	001																				24
70- 79	009	018	008	003	009	002	001		001																	51
80- 89	009	027	020	014	005	005	003	002	001																	86
90- 99	008	039	031	022	016	008	004	005	002	002	001		002													140
100-109	012	033	039	035	025	020	009	019	010	007		003	006	004	002											224
110-119	007	042	042	025	020	022	007	009	006	003	001	002	001	001												188
120-129	009	024	028	029	017	009	010	004	002	002																134
130-139	008	029	019	013	006		002				001															78
140-149	006	011	013	003	002																					35
150-159	004	002	002	001																						9
160-169																										0
170-179																										0
180-189		001																								1
190-199																										0
200-209		001																								1
210-219																										0
220-229		001																								1
230-239		002																								2
240-249																										0
250-259			001					001	001			001														4
260-269	003	005	002	007	011	018	011	021	024	028	025	010	010	003												178
270-279	012	032	041	047	034	064	061	084	068	078	046	027	017	003												614
280-289	010	035	036	031	034	029	030	044	039	028	003	004	004													327
290-299	008	025	011	014	007	012	008	013	005	002		001														106
300-309	004	023	011	009	005	004	002					001														59
310-319	004	013	002	002	002	001	001																			25
320-329	006	011	003	002		001		001																		24
330-339	008	008	002	001	001	003		001																		24
340-349	002	001	002																							5
350-359	003	003	002	001																						9
	159	438	334	265	196	199	149	204	159	150	77	49	40	11	2	0	0	0	0	0	0	0	0	0	0	2432

NUMBER OF ZERO RATES 102


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
005 015M 8200 52 /73 26
SCALE
10 MILES
N
55
57
58
60
62
64
66
68
70
72
74
76
77

TIDAL CURRENT ELLIPSE

STN 005 DEPTH 015 JOHNSTONE ST. 50 27.7 N 126 8.3 W

STARTING TIME OF ANALYSED DATA 0 MIN 15 HR 21 DAY 2 MON 73 YR

LENGTH OF DATA 26 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	9.7	.0	178.9	.0
MSF	1.0	-.2	83.5	216.3
2Q1	.8	-.4	147.8	147.0
Q1	1.0	.2	174.0	199.6
O1	2.5	.0	163.9	205.0
K1	4.2	-.1	174.5	214.1
J1	.2	.1	148.0	229.4
OO1	.3	.1	154.6	126.5
N2	6.0	-.2	169.0	141.1
M2	33.3	-1.4	171.1	193.8
L2	1.0	.2	168.4	224.4
S2	11.9	-.2	170.8	211.1
2SM2	.5	-.2	112.7	338.3
MO3	1.0	.1	177.7	103.2
M3	.4	.2	16.2	234.6
MK3	1.6	.1	6.9	99.7
SK3	.8	.0	151.2	192.0
MN4	2.0	.7	2.8	119.8
M4	4.3	.6	16.8	279.8
MS4	2.1	.8	29.3	241.8
S4	1.5	.0	171.3	288.5
2MN6	1.1	-.1	41.5	221.2
M6	.7	.2	45.6	345.9
2MS6	1.2	.0	22.9	343.6
2SM6	1.0	-.1	15.1	300.4
3MN8	.6	.1	1.3	143.8
M8	.4	-.1	165.2	5.7
3MS8	1.4	-.1	169.3	66.6
M12	.8	.1	162.5	297.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 005 DEPTH 015 JOHNSTONE ST. 50 27.7 N 126 8.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 22 1973

MAJOR COMPONENT	-8	-6	-9	-9	-12	-8	-7	-10	-11	-11
MINOR COMPONENT	-1	0	1	1	3	0	0	0	1	1

MAR. 4 1973

MAJOR COMPONENT	-14	-11	-11	-12	-11	-9	-9	-7	-9	-6
MINOR COMPONENT	1	-2	0	0	0	0	0	1	1	1

MAR. 14 1973

MAJOR COMPONENT	-12	-10	-12	-15	-6
MINOR COMPONENT	1	2	0	0	0

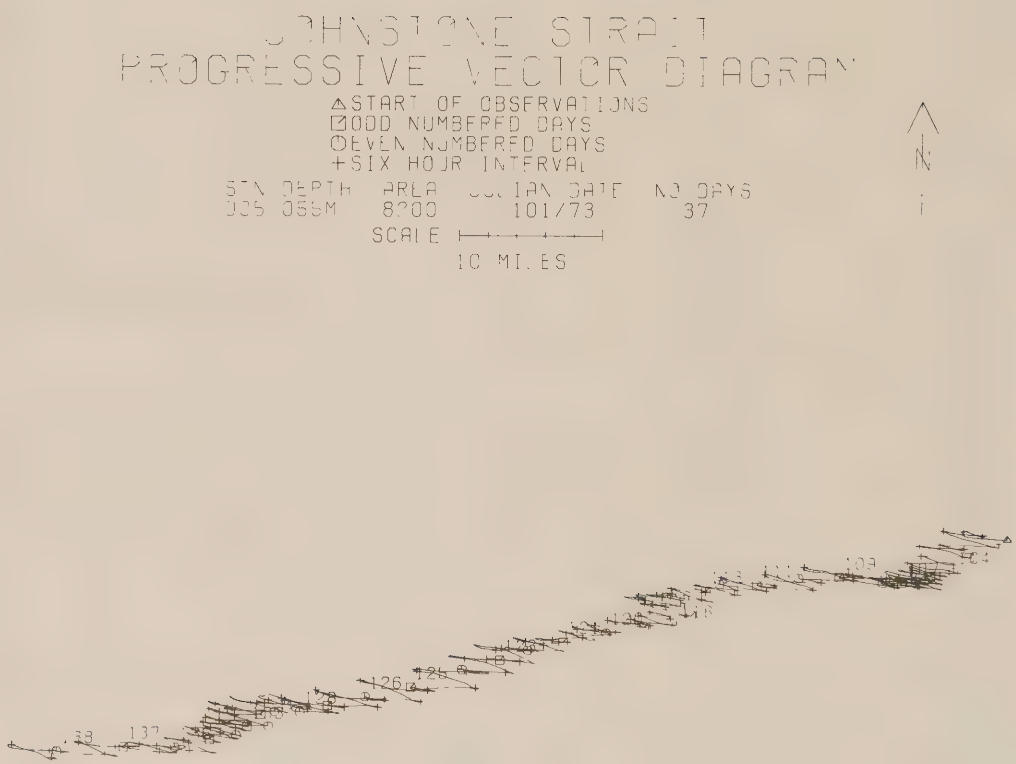
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 005 DEPTH 055 JOHNSTONE ST. 50 27.7 N 126 8.3 W LENGTH OF RECORD= 38 DAYS
START OF RECORD 00 MN 00 HR 11 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001	001	001		001																					4
10- 19	010	003	001			001																				15
20- 29	010	018	004	002	004																					38
30- 39	004	003	003	001																						11
40- 49	006	011	004	001	001	001																				24
50- 59	016	015	009	006	001	001		001																		49
60- 69	012	011	002	006	002	003	003	001	001	002	001															44
70- 79	009	030	013	013	006	005	003	001	001	002																82
80- 89	020	035	025	013	016	017	007	013	007	004	006		001	001	001											166
90- 99	028	047	035	017	033	024	021	016	022	033	020	011	005	005	005	006										328
100-109	021	040	047	029	032	041	037	052	042	037	032	020	014	014	006	002										466
110-119	031	061	039	036	029	028	027	030	020	013	017	008	009	013	003	001										365
120-129	012	035	023	015	008	005	004	007	007	008	008	003	001	002												138
130-139	019	025	018	007	002		002	002				001														76
140-149	012	016	009	005		001	001																			44
150-159		001																								1
160-169		001	001																							2
170-179																										0
180-189																										0
190-199	001																									1
200-209		001																								1
210-219																										0
220-229		001																								1
230-239																										0
240-249	001																									1
250-259	001				002	004	003	002	001	002	001	001														17
260-269	002	003	004	004	015	014	016	010	031	032	048	024	015	009	002											229
270-279	012	039	047	043	050	072	088	072	097	099	097	061	042	015	004											838
280-289	010	037	044	045	034	050	044	031	020	032	020	008	007													382
290-299	010	013	019	009	018	010	010	005	009	002			002													107
300-309	009	027	009	004	010		001	002	001																	63
310-319	003	006	006	007	001		002	002																		27
320-329	007	014	006	001	001	001		001																		31
330-339	[illegible]	013	005	006		001																				27
340-349	[illegible]	007	001		[illegible]																					10
350-359	[illegible]	013	002	001																						23
	[illegible]	[illegible]	371	[illegible]	[illegible]	279	269	249	[illegible]	266	250	137	96	59	21	9	[illegible]	[illegible]	0	0	0	[illegible]	[illegible]	0	0	3611

NUMBER OF ZERO RATES [illegible]


JOHNSTONE STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊕EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
025 055M 8200 101/73 37
SCALE
10 MILES
N
104
108
118
120
126
128
137
138

TIDAL CURRENT ELLIPSE

STN 005 DEPTH 055 JOHNSTONE ST. 50 27.7 N 126 8.3 W

STARTING TIME OF ANALYSED DATA 0 MIN 2 HR 11 DAY 4 MON 73 YR

LENGTH OF DATA 37 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	4.1	.0	13.1	180.0
MM	.6	.2	59.2	141.4
MSF	2.5	-.2	176.2	50.6
2Q1	1.1	.1	161.1	315.1
Q1	1.6	.2	161.3	204.6
O1	5.1	-.5	161.4	175.3
NO1	1.0	.1	143.9	73.2
K1	8.8	.0	166.3	195.7
J1	1.0	-.2	158.9	272.5
OO1	.5	-.3	167.2	220.9
MNS2	.8	-.2	167.6	342.1
MU2	3.8	.2	169.6	46.1
N2	7.3	.0	171.4	176.0
M2	41.1	-.9	171.5	195.6
L2	1.8	.1	169.5	237.3
S2	10.7	-.5	174.2	193.3
KJ2	.8	-.1	172.5	274.1
2SM2	.7	-.1	174.9	321.4
MO3	.9	.2	83.5	5.5
M3	.7	.3	55.6	9.5
MK3	2.7	1.6	14.1	53.9
SK3	1.3	-.1	141.6	219.9
MN4	.6	.1	89.4	161.4
M4	2.6	1.2	43.3	225.3
SN4	.9	.3	174.7	261.8
MS4	2.3	.8	8.1	257.7
S4	.5	-.2	4.7	232.3
2MN6	1.5	-.1	1.4	28.5
M6	2.3	-.1	10.4	104.8
MSN6	1.7	-.2	4.1	41.6
2MS6	2.0	-.4	8.5	159.0
2SM6	.9	.0	20.5	172.8
3MN8	.6	.1	4.2	10.9
M8	.4	.1	16.7	136.4
3MS8	1.5	.0	11.9	233.0
M12	.5	.0	179.8	200.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 005 DEPTH 055 JOHNSTONE ST. 50 27.7 N 126 8.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

APR. 11 1973

MAJOR COMPONENT	-1	-4	-2	-3	-1	-3	-3	-7	-6	-6
MINOR COMPONENT	-1	-1	-2	-1	-1	0	0	1	0	-1

APR. 21 1973

MAJOR COMPONENT	-6	-2	-3	-3	2	2	-2	-5	-6	-6
MINOR COMPONENT	0	-1	-1	0	-1	-1	-2	0	-1	-1

MAY 1 1973

MAJOR COMPONENT	-5	-4	-5	-8	-7	-6	-4	-2	-2	-2
MINOR COMPONENT	-1	-1	-1	-3	-1	-1	-1	1	-1	0

MAY 11 1973

MAJOR COMPONENT	1	-3	-2	-4	-5	-8	-10
MINOR COMPONENT	-2	0	-1	-1	-1	0	-1

DATA RECORD OF CURRENT OBSERVATIONS
VOLUME XV

JUAN DE FUCA STRAIT
1973

W.S. Huggett, J.F. Bath, A. Douglas

INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY

Victoria, B.C.

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V8W 1Y4

DATA RECORD OF CURRENT OBSERVATIONS

VOLUME XV

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1976

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SOUTHERN BRITISH COLUMBIA COAST

INDEX

1. INTRODUCTION

The 1973 oceanographic program in Juan de Fuca Strait was both an investigation into the flushing process of the Strait of Georgia, involving current measurements simultaneous with those in Johnstone Strait (Institute of Ocean Sciences, Patricia Bay, Data Record Volume XIV, 1976), and an attempt to obtain current observations as input to the Strait of Georgia numerical tidal model. Continuous records of currents (and temperature and conductivity at some locations) were obtained over a period of three months, and at two stations for a period of five and one half months.

Time series of temperature and salinity profiles were taken at twenty-two stations during the time the current meters were in place, and at nine stations in the period June to December, 1973, when there were no current observations. For information on these measurements see University of British Columbia, Institute of Oceanography, data reports Nos. 38 and 39, 1976.

2. INSTRUMENT DEPLOYMENT

Six arrays were bottom-moored across Juan de Fuca Strait from one mile west of Pillar Point, Wash., to one mile west of Point No Point, B.C. (Figure 1). Each array consisted of from two to five current meters with each meter attached to its own buoyancy float by a three-metre length of 3/4 inch polypropylene rope (Figure 2). The anchoring system consisted of two anchors joined by a one-inch polypropylene ground line. One anchor consisting of two railway wheels was placed under the meter string and the other anchor of one railway wheel was attached to the other end of the 600 metre ground line, used to recover the arrays. The arrays were moored from March 6, 1973 to June 14, 1973 and were serviced once during this time (April 13-19). On the first deployment (March 6 - April 16) nineteen CMDR current meters and four Aanderaa current meters were used (Figure 3) and on the second deployment fifteen CMDR current meters and eleven Aanderaa current meters were used (Figure 4). At the end of this period two of the meters were re-deployed at different stations and recovered on August 30, 1976. All moorings were laid from the C.S.S. Parizeau.

The positions have been labelled 1 to 6 starting from the Vancouver Island, or north side of the strait. In the Georgia Strait - Juan de Fuca Strait complex this is the eleventh cross-section line, and in our standard three-figure notation for station numbers and three figures for depth (in metres from the surface), the current meters are designated by a six-figure number (e.g. 113180 - line 11, station 3, depth 180 m) and used throughout this paper to identify each position where measurements were taken.

The current meters were moored at depths of 15, 50, 100, 150 and 180 metres from the surface. The two end arrays, moored in shallower water than the middle four, carried two meters each, while Station 2 carried

four meters and the other three stations carried five meters each. At Stations 2, 3, 4 and 5 the current meters at the 15 m and 50 m depth were placed on separate moorings in order to minimize losses should a tug's tow line become entangled in the floats and meters. At Station 3, an additional mooring was laid to provide a comparison between the records of a CMDR meter and an Aanderaa meter at the same depth (Figure 3).

At Stations 1 and 6 a surface marker buoy (donut type fitted with flashing lights and radar reflectors) was moored from the single railway wheel at the end of the ground line. These were used to aid in the recovery of the array because of the difficulty in dragging for a ground line over a steeply sloping bottom. The current meter moored at the 15 m depth at Station 2 was snagged by a tow line after being in position for twenty days. The whole array, including the anchors, was towed off position and was not discovered until the tug commenced shortening the tow line preparatory to crossing the bar at the entrance to the Columbia River, a total of 180 miles. The current meter and sub-surface buoy were returned in good operating condition.

A total of 276 STD casts were made at twenty-two stations during the time the current meters were in position (see I.O.U.B.C. data report 38). A further 219 STD casts were made at ten stations in the period June to December, 1973 (see I.O.U.B.C. data report 39).

3. INSTRUMENTS

Two makes of current meters were used on this project, the Aanderaa RCM4 and the Neyrpic CMDR. The former current meters recorded the average speed over a 15 minute interval and the instantaneous direction at the end of each period on 1/4 inch magnetic tape. In addition, every Aanderaa meter recorded the temperature, three recorded the pressure and two the conductivity. The manufacturer's specifications for the Aanderaa current meters are: direction ±5°, temperature ±0.1°C and pressure ±1%; speed and conductivity are not specified but the speed range is given as 1.5-250 cm/sec.

Since it was not possible at the time to calibrate the pressure sensors for absolute depth or long-period drift, only short term relative changes in pressure are valid. The Neyrpic CMDR current meters accumulate a pulse count from an impeller and, together with an instantaneous compass direction, are punched on a Friden paper tape every ten minutes. The manufacturer specifies that the operating range of the instrument is 3-600 cm/sec with the relationship between current speed and impeller speed accurate to within 1%.

The STD casts were made on a Bissett-Berman model 9006. Calibration of the instrument was based upon the numerous casts made during the survey. These suggest that on the average the instrument ranged from 0.12 $^{o}/oo$ high at the surface to 0.16 $^{o}/oo$ high at a depth of 220 m, while temperature readings were nearly 0.08°C low at all depths. Manufacturer's specifications for this instrument are ±0.03°C for temperature, ±0.05 $^{o}/oo$ for salinity and ±1% for depth.

4. RESULTS

4.1 Mooring Motion

Because of subsurface floatation there was, at times, considerable tilt in the lines. In 1975 when a survey in Juan de Fuca Strait was carried out using nine Aanderaa current meters, of which six recorded pressure, it was found that under the most adverse conditions the line tilt was 39° (Fissel and Huggett, 1976). The spindle on the Aanderaa meter is so designed that it can tilt only 30° with respect to the mooring, and the allowable tilt of the current meter is 10° before any changes in the response are noted. On the CMDR current meters the tail fin assembly is 1.4 m from the suspension point giving the meter a fairly good levelling moment. The impeller is accurate to ±10° from the horizontal, so that possibly a few readings at maximum current during spring tides are less than they should be, but for the most part they should give a true reading.

Nominal depths have been used to show the data, and no corrections have been applied to the speeds.

4.2 Current Observations

Of the thirty-five CMDR current meter stations only six functioned over the full mooring period, four recorded just over 75% of the time, and the remainder ran for varying lengths of time (Table 1). Of the sixteen Aanderaa current meter stations, nine recorded throughout the full period, one meter lost its rotor when being moored, and the others gave incomplete lengths of record due to a variety of reasons (Table 2).

The data shows that the current speed varies from just under 125 cm/sec (2.5 knots) on the surface to 75 cm/sec (1.5 knots) near the bottom. The principal semi-diurnal component M_2 changes very little over the whole cross-section, averaging around 48 cm/sec with a phase angle of 245°. Similarly with K_1, there is very little change over the cross-section, averaging 29 cm/sec with a phase angle of 254°. The residual current shows a down-strait or west-going current in the upper portion of the strait, and an up-strait or east-going current in the lower half. The line of null velocity slopes upward from around a depth of 110 m on the north side of the strait to the surface on the southern side about one half mile off shore. (Figure 5). The two currents have the same maximum speed of around 14.5 cm/sec with the maximum west-going current being on the surface in the centre of the strait, and the maximum east-going current centred about the middle of the east-going portion of the cross-section.

At stations 112100 and 115100 the current meters were left in place for an additional 76 days. However, the current meter at station 112100 failed to operate after 46 days. From the analysis of station 115100 of 178 days of continuous records we were able to extract the constituent P_1 from K_1.

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Fissel, D.B. & W.S. Huggett, 1976: Observations of currents, bottom pressures and densities through a cross-section of Juan de Fuca Strait, Institute of Ocean Sciences, Patricia Bay. Pacific Marine Science Report 76-6, Victoria, B.C.

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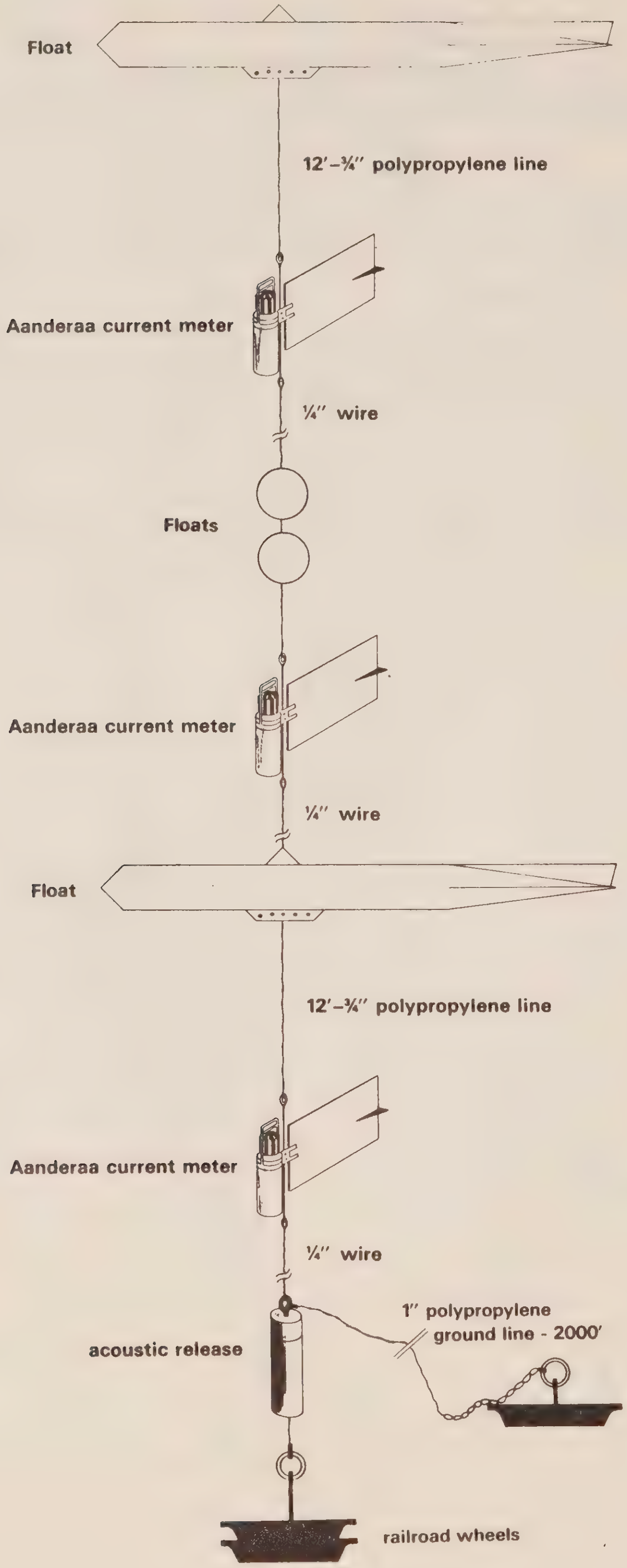
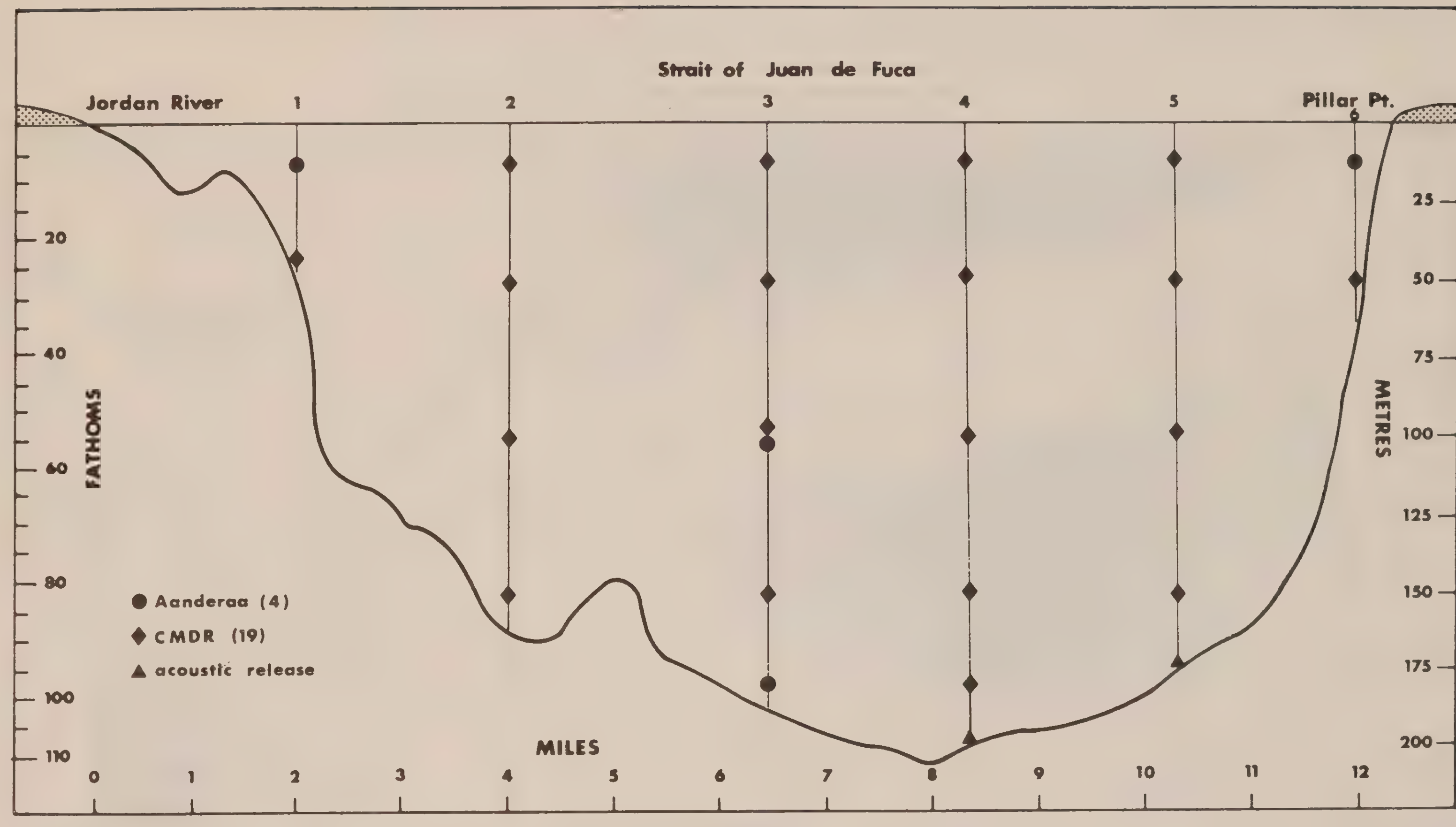
Figure 1: CURRENT METER POSITIONS

Figure 2: **ANCHORING SYSTEM USED IN JUAN DE FUCA STRAIT**





FIRST DEPLOYMENT
Figure 3: March 6, 1973 to April 16, 1973

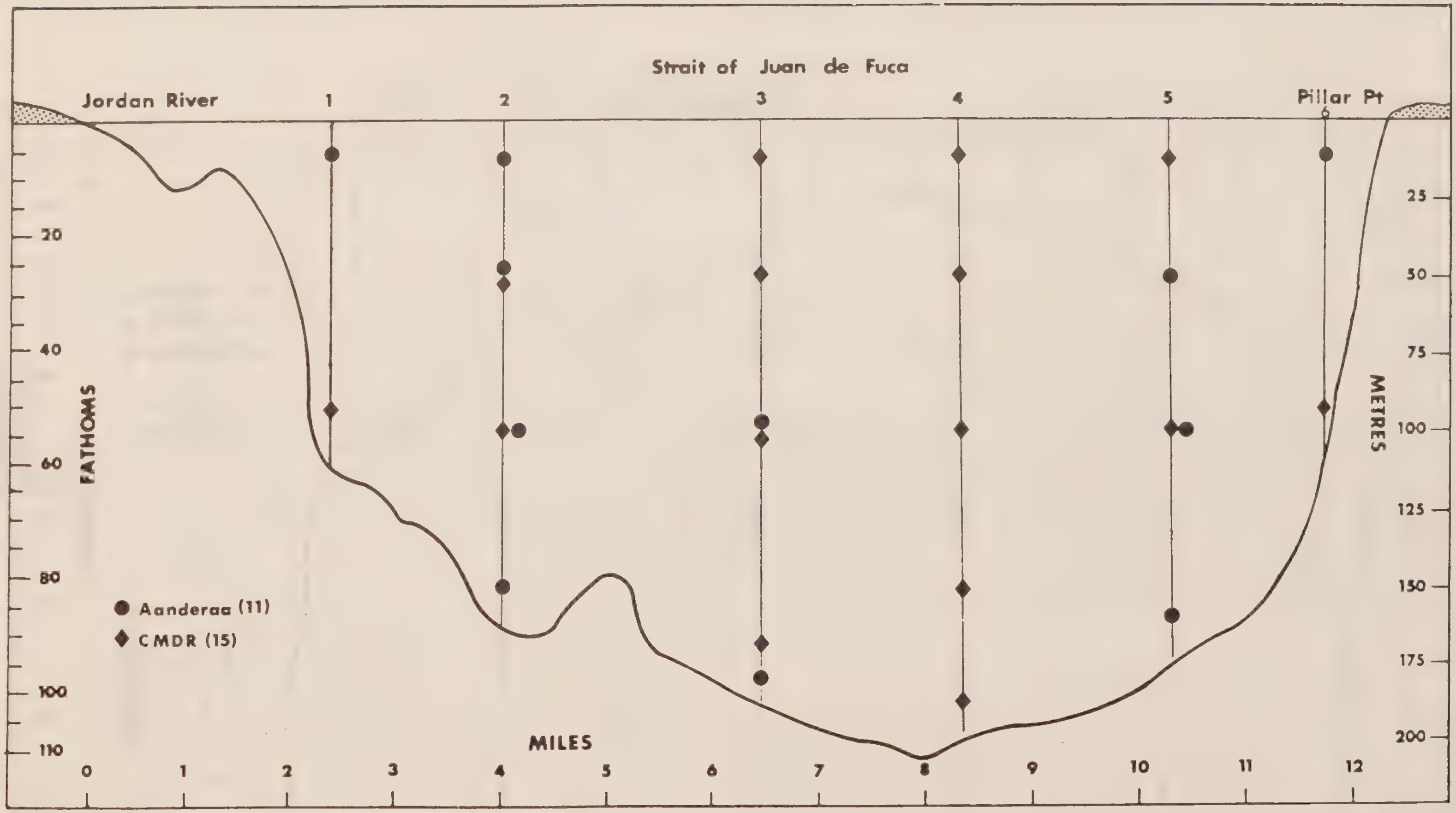


Figure 4: SECOND DEPLOYMENT
April 17, 1973 to June 14, 1973
(Stations 112-100 & 115-100 operated until Aug. 30, 1973)

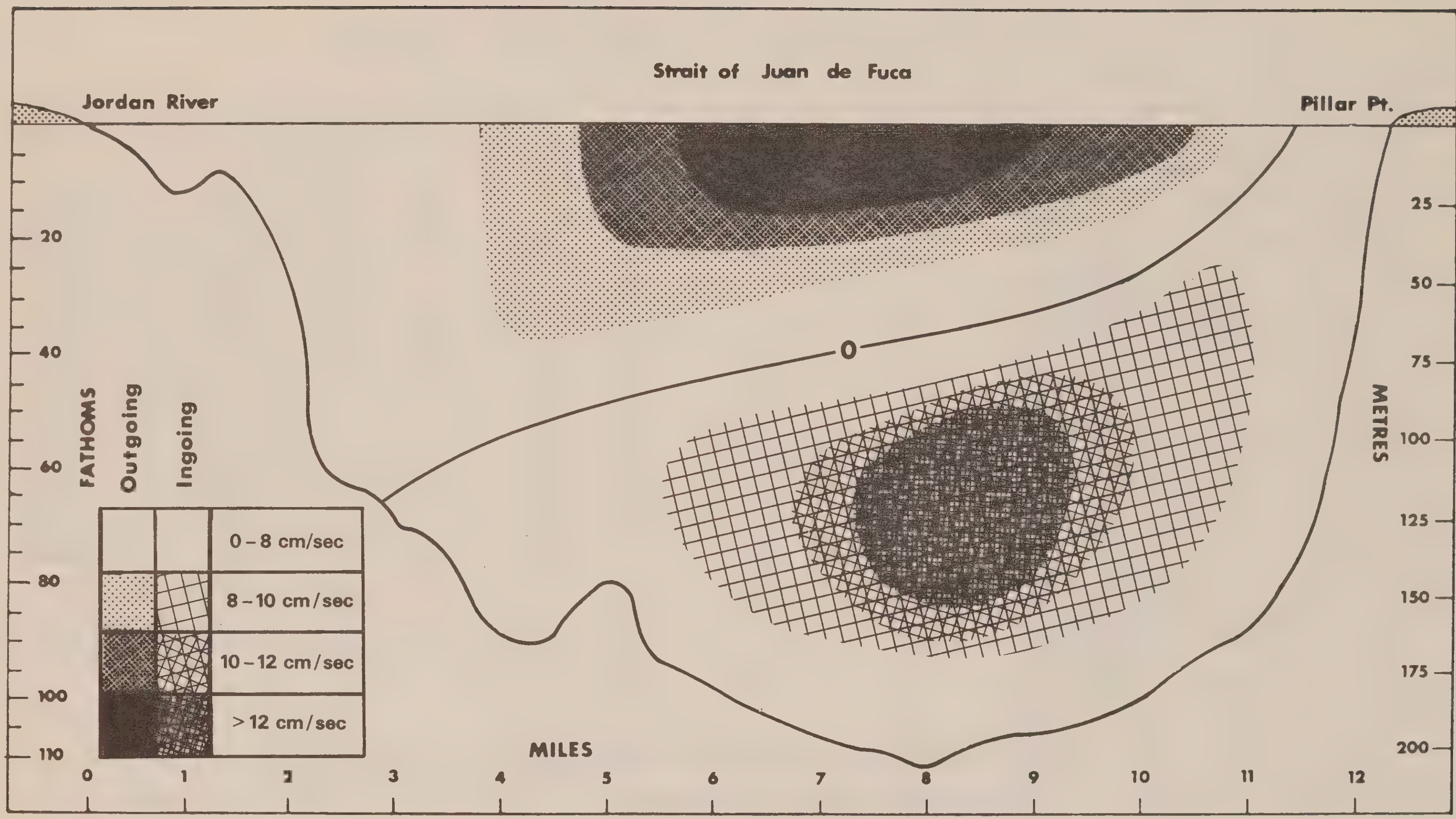


Figure 5: **RESIDUAL CURRENT**

STATION	METER	DATE	NO. OF DAYS	CURRENT SPEED	CURRENT DIRECTION	TEMPERATURE	PRESSURE	CONDUCTIVITY	REMARKS	PERCENT
111097	50	6/3/73	42	7	7				No speeds after 14 days	17
111097	50	17/4/73	59						Low speeds & stretches of no speeds	-
112015	65	5/3/73		20	20				Array towed to Columbia River, meter retrieved by tug and returned	–
112050	64	5/3/73	38	24	24				Clock battery dead	63
112050	67	13/4/73	61	56	56					92
112100	66	5/3/73	38	29	29				First 9 days N.G.	76
112100	66	13/4/73	62	38	38					61
112157	67	5/3/73	38	14	14				Battery dead	38
113015	69	5/3/73	45	45	45					100
113050	68	6/3/73	39	39	39					100
113050	68	14/4/73	60	60	60					100
113100	70	6/3/73	39	27	27					69
113100	70	14/4/73	60	60	60					100
113160	71	6/3/73	39	11	11				Clock battery dead	28
113170	71	14/4/73	60	7	7				No reset to zero after speed reading	12
114015	75	7/3/73	40	14	14				Speed eratic after 14 days	35
114015	75	17/4/73	58						Did not punch, relay trouble	-
114050	72	6/3/73	41	6	6				No reset to zero, and no records over 1 knot	-
114050	72	17/4/73	58						No speeds	-

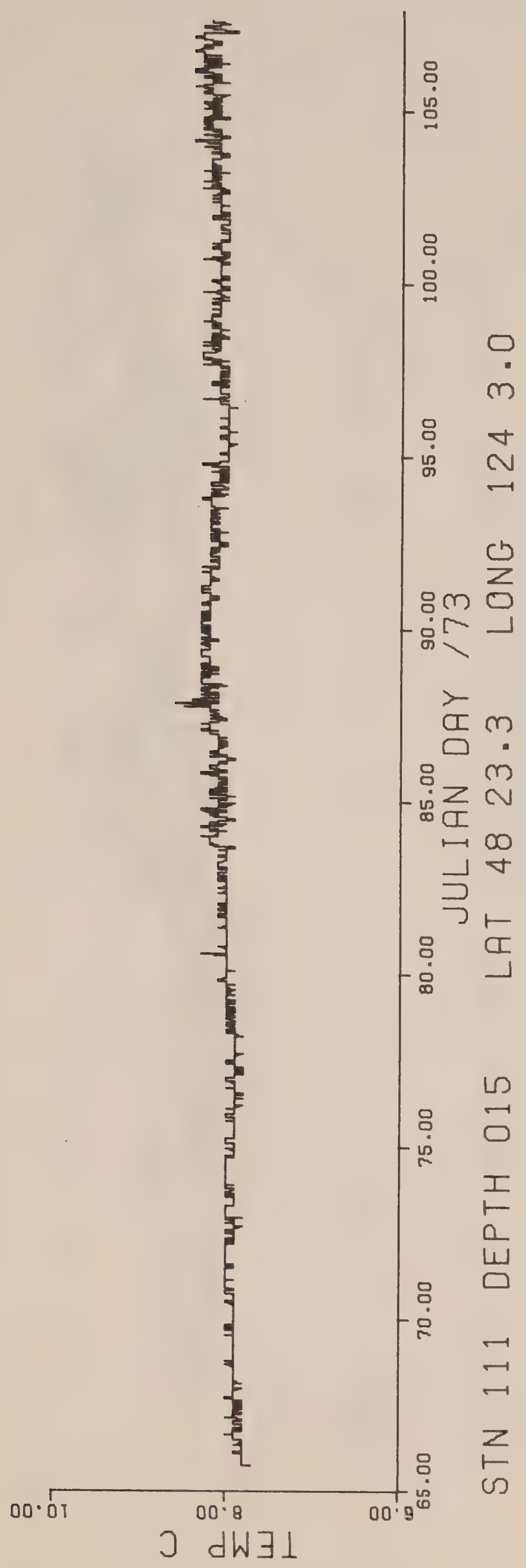
Table 1: Performance of C.M.D.R. Meters

STATION	METER	DATE	NO. OF DAYS	CURRENT SPEED	CURRENT DIRECTION	TEMPERATURE	PRESSURE	CONDUCTIVITY	REMARKS	PERCENT
114100	73	6/3/73	41	33	33				Paper take-up trouble	80
114100	73	17/4/73	58	58	58					100
114150	80	6/3/73	41	4	4				Clock battery dead	10
114150	80	16/4/73	59						No speeds	-
114188	81	6/3/73	41						Clock battery dead	-
114188	81	16/4/73	59	15	15				Take-up trouble (Concertina) No speeds, short tape	-
115015	82	6/3/73	41	18	18				Take-up trouble, tape torn at end	44
115015	82	17/4/73	59	59	59				Geodyne clock slow (20 min. over 59 days)	100
115050	85	6/3/73	41						Only 3 days of speeds	-
115100	83	6/3/73	41	34	34				O.K. for 34 days then threshold too high	83
115100	83	17/4/73	58	18	18				No speeds after 5/6/73	31
115100	83	13/5/73		17	17				Data broken into two usable parts	29
115160	84	6/3/73	41						No speeds	-
116015	86	6/3/73	42						Fuse loosened, no records	-
116090	86	17/4/73	58						Low speeds	-

Table 1: Performance of C.M.D.R. Meters (cont'd.)

STATION	METER	DATE	NO. OF DAYS	CURRENT SPEED	CURRENT DIRECTION	TEMPERATURE	PRESSURE	CONDUCTIVITY	REMARKS	PERCENT
111015	660	6/3/73	42	42	42	42				100
111015	660	17/4/73	59	24	24	24			Vane broken, dragged by log boom	41
112015	340	19/4/73	55						Ground line cut by prop., rotor missing	-
112015	737	13/4/73	61	61	61	61	61	61		100
112050	737	15/6/73	76		76	76	76	76	No speeds-direction, temp, conductivity & pressure all O.K.	80
112100	733	15/6/73	76	46	46	46	46		Stopped after 46 days	61
112150	643	13/4/73	62	61	61	61				98
113015	98	19/4/73	57	57	57	57				100
113100	736	17/4/73	59	59	59	59	59	59		100
113180	642	17/4/73	59	45	45	45		45	Wire & rope tangled in meter	76
115050	644	17/4/73	58	58	58	58		58		100
115050	736	15/6/73	76	33	33	33	33	33	Rotor broken off	43
115100	735	15/6/73	77	77	77	77	77		Meter full of water, tape good	100
115160	641	17/4/73	58						Battery dead-take up drive spring off pulley	-
116015	661	6/3/73	42	42	42	42				100
116015	661	17/4/73	58	58	58	58				100
117004	641	5/3/73	18						Meters O.K., but records N.G. due to Geodyne surface buoy	-
117011	642	5/3/73	18							-

Table 2: Performance of Aanderaa Current Meters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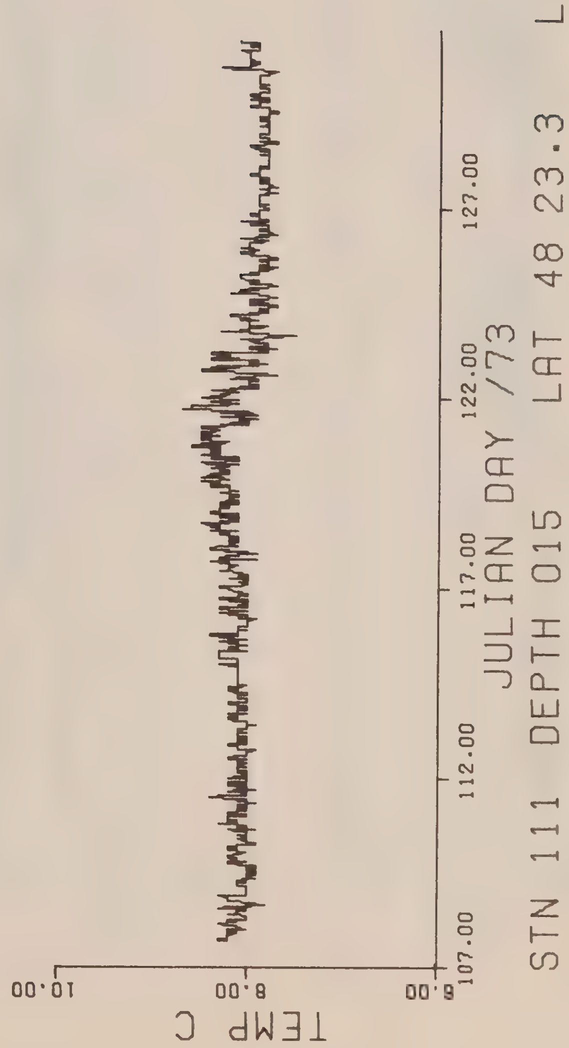
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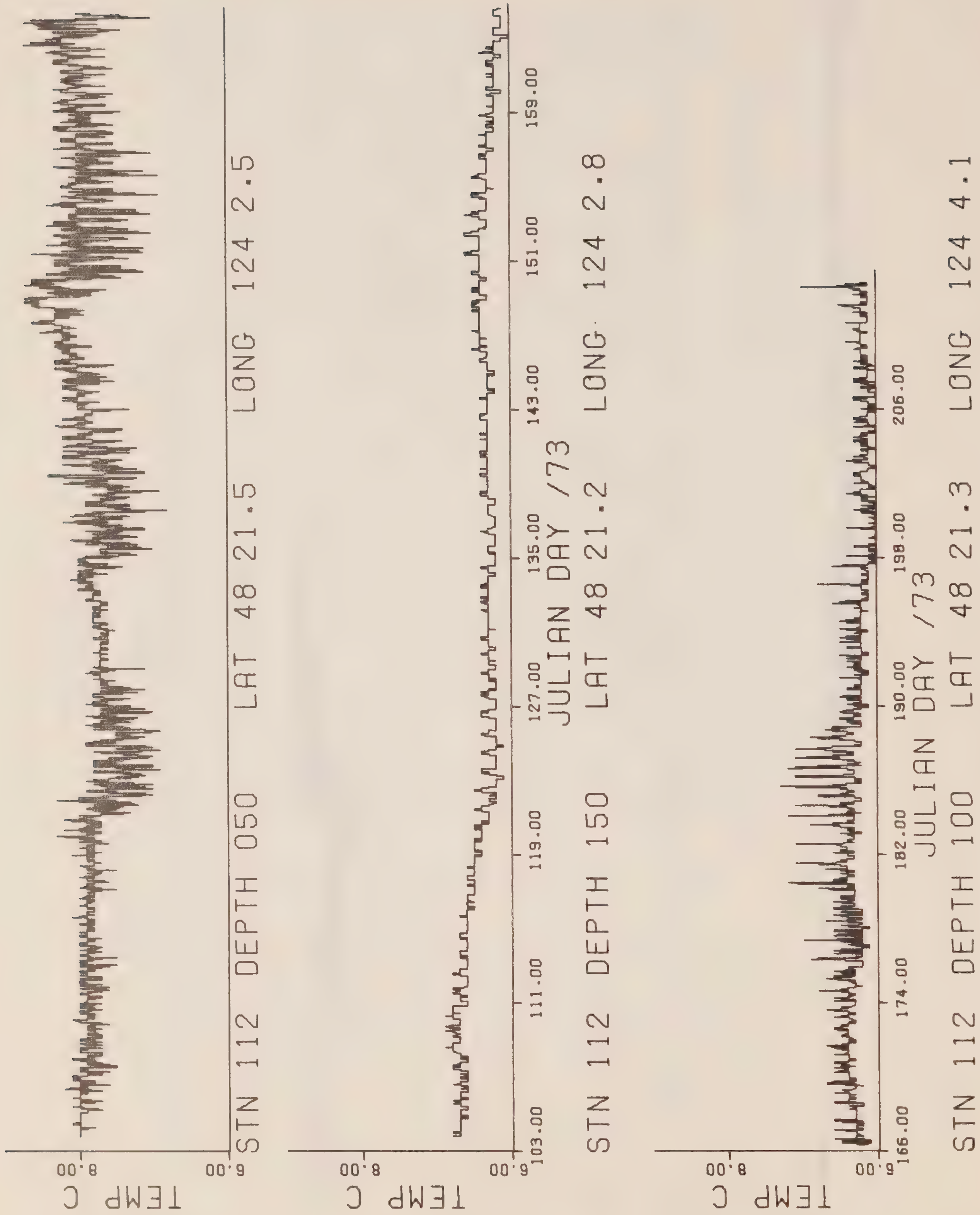
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111.00
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127.00
135.00
143.00
151.00
159.00
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8.00
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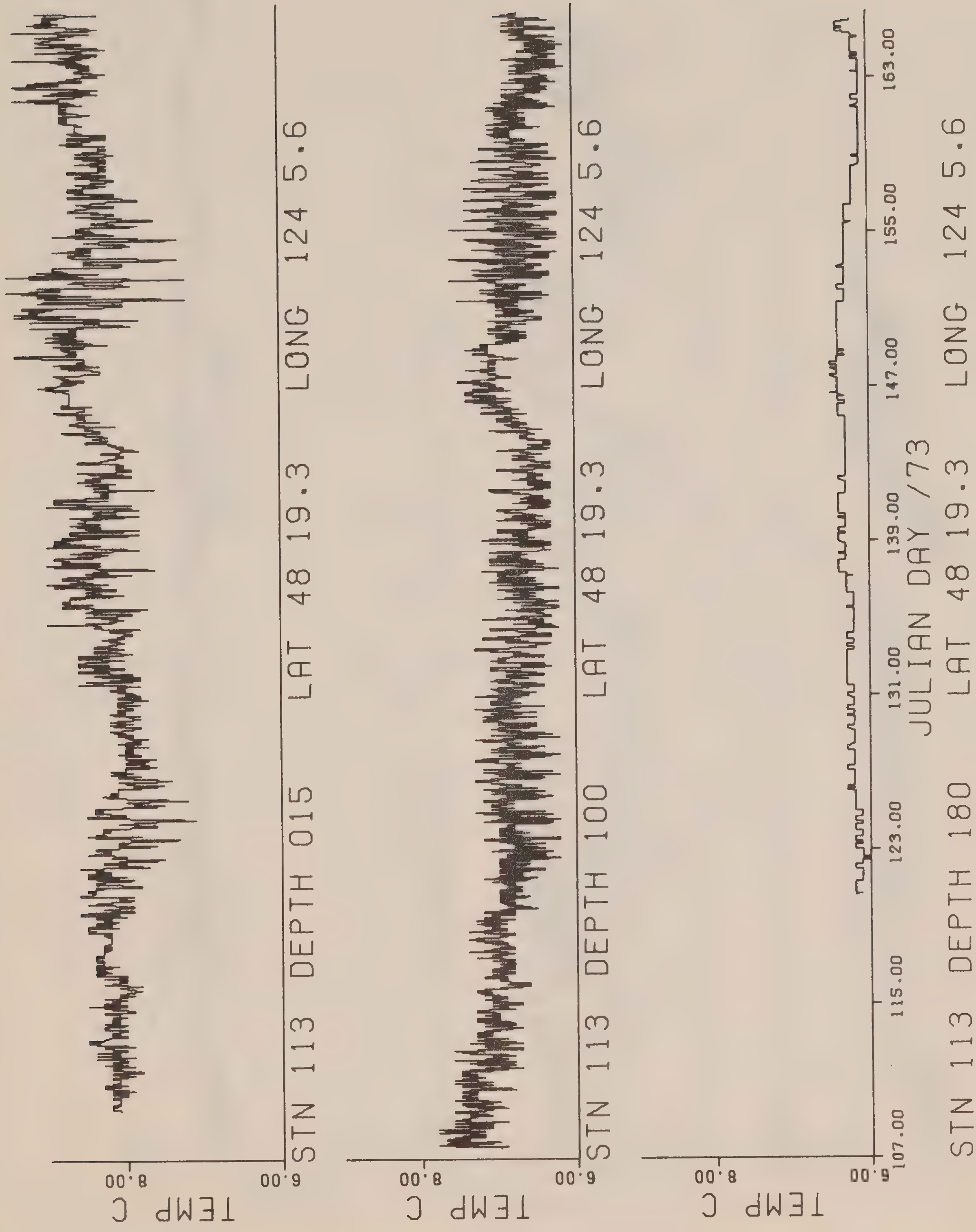
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8.00
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TEMP C
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8.00
JULIAN DAY /73
107.00
115.00
123.00
131.00
139.00
147.00
155.00
163.00


TEMP C
6.00
8.00
107.00
117.00
127.00
137.00
147.00
157.00
JULIAN DAY /73
STN 115 DEPTH 050 LAT 48 15.4 LONG 124 7.8


TEMP C
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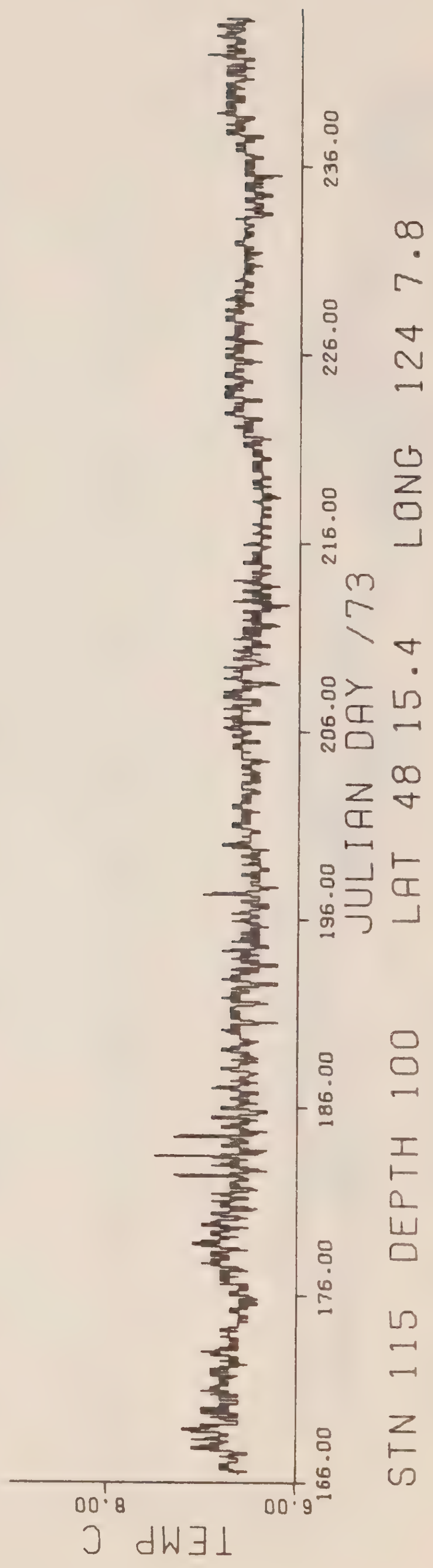
8.00
STN 115 DEPTH 050 LAT 48 15.4 LONG 124 7.8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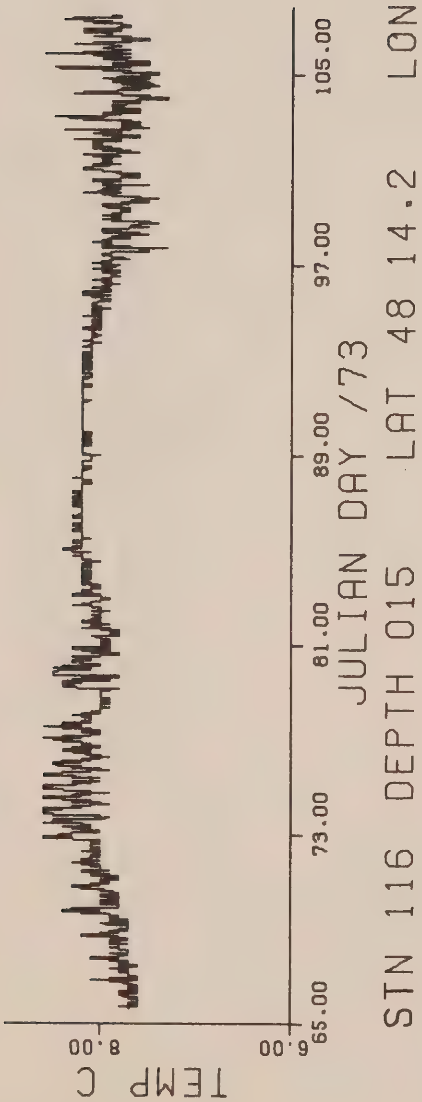
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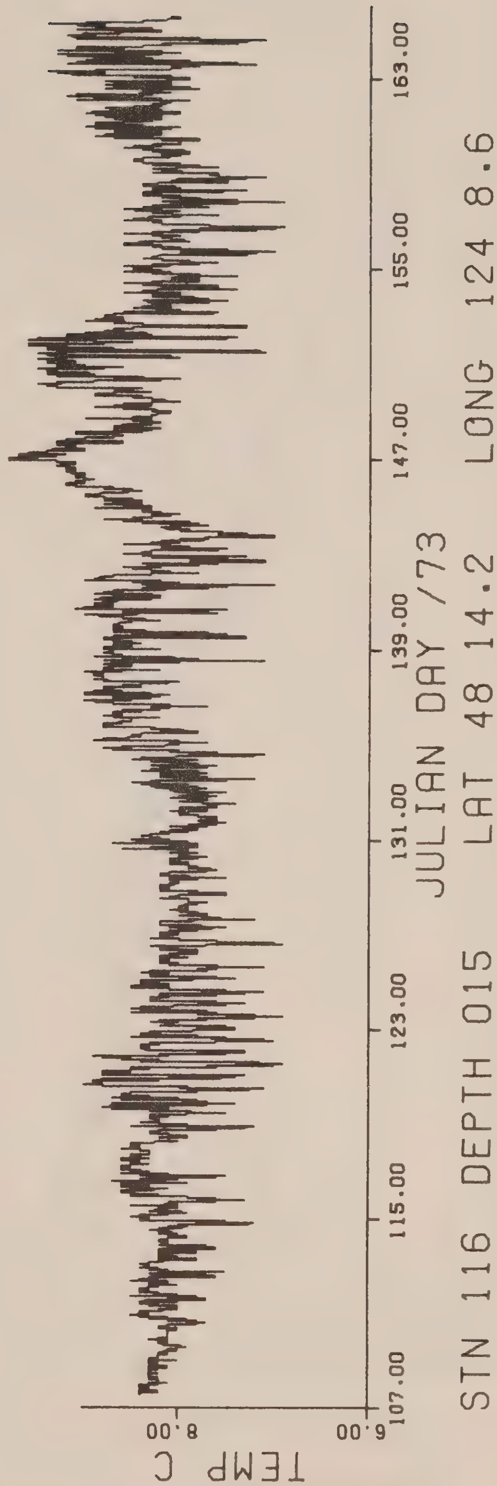
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139.00
147.00
155.00
163.00
JULIAN DAY /73
STN 116 DEPTH 015 LAT 48 14.2 LONG 124 8.6

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

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START OF RECORD 30 MN 17 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	014	010																								24
10- 19	011	006	001																							18
20- 29	014	007																								21
30- 39	003	001																								4
40- 49	009	007																								16
50- 59	007	005	001																							13
60- 69	013	004	001																							18
70- 79	009	018	003																							30
80- 89	009	018	007	001	001	001																				37
90- 99	012	018	023	013	014	005		001	001																	87
100-109	008	025	023	030	037	026	032	019	028	010	007															245
110-119	012	030	040	028	043	083	099	078	064	060	025	008	002													572
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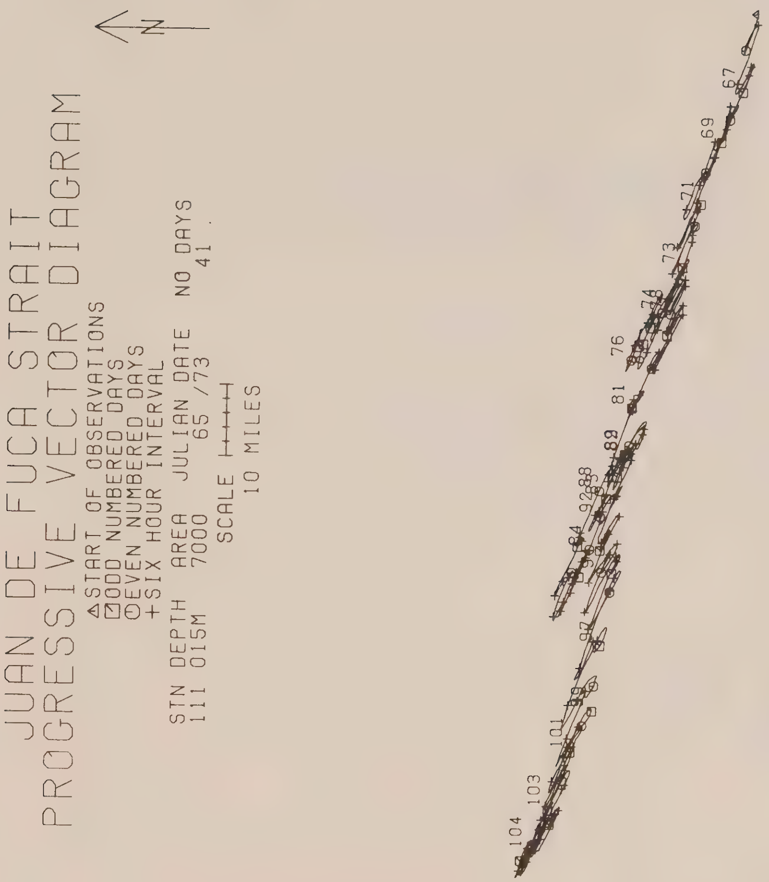
140-149	011	016	020	009	003	001																				60
150-159	013	017	010	005																						45
160-169	014	015	003																							32
170-179	012	010	004																							26
180-189	012	008																								20
190-199	006	008	001																							15
200-209	009	003	001																							13
210-219	009	005																								14
220-229	009	004																								13
230-239	007	009																								16
240-249	013	007	001																							21
250-259	012	014	002	001																						29
260-269	023	029	007	004																						63
270-279	016	052	018	011	008	004	002	001		001	001															114
280-289	018	058	069	047	056	049	033	040	024	026	021	023	010	004												478
290-299	014	070	101	106	115	116	096	087	074	054	051	034	014	002												934
300-309	010	043	057	076	048	032	024	011	005	002																308
310-319	013	033	030	018	011	002	002																			109
320-329	014	021	014	005																						54
330-339	012	013	009	001	002																					37
340-349	018	009	003																							30
350-359	010	009	001																							20
	422	669	511	422	404	380	340	281	214	169	110	67	26	6	0	0	0	0	0	0	0	0	0	0	0	4021

NUMBER OF ZERO RATES 0


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
111 015M 7000 65 /73 41
SCALE
10 MILES
N
67
69
71
73
76
81
97
101
103
104

TIDAL CURRENT ELLIPSE

STN 111 DEPTH 015 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W

STARTING TIME OF ANALYSED DATA 00 MIN 19 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 41 DAYS 17 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	5.9	.0	166.5	.0
Q1	5.5	-.5	149.0	232.7
O1	19.3	1.2	151.5	240.7
NO1	1.2	-.3	4.0	139.6
K1	29.4	.4	157.3	249.7
J1	.7	.5	153.0	258.8
OO1	1.9	.6	170.6	351.2
MU2	1.6	-1.0	5.3	242.3
N2	11.8	-.2	156.4	227.1
M2	57.1	-3.3	155.7	246.2
L2	2.2	.3	158.6	124.6
S2	17.5	-.5	154.6	266.9
MN4	.9	.0	159.6	253.8
M4	1.2	.2	11.2	80.6
MS4	.7	.1	62.4	65.9
M6	.8	.6	75.2	256.6
M8	.8	.1	156.8	312.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 111 DEPTH 015 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973									
MAJOR COMPONENT									
-12	-9	-7	-10	-9	-7	-13	-15	-11	-6
MINOR COMPONENT									
-5	0	-1	0	-3	-1	-2	0	1	1
MAR. 17 1973									
MAJOR COMPONENT									
11	6	-6	-11	-13	-13	-14	-16	-9	0
MINOR COMPONENT									
-1	-4	-2	0	0	-4	0	-2	-1	3
MAR. 27 1973									
MAJOR COMPONENT									
8	18	13	3	-10	-13	-9	-6	1	-5
MINOR COMPONENT									
2	1	-2	0	-1	-1	-4	-3	-3	-2
APR. 6 1973									
MAJOR COMPONENT									
-16	-12	-7	-5	-9	-9	-10	-14	-4	6
MINOR COMPONENT									
-4	-4	-3	1	0	-1	0	-1	1	-1
APR. 16 1973									
MAJOR COMPONENT									
8									
MINOR COMPONENT									
-2									

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 111 DEPTH 015 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W LENGTH OF RECORD= 24 DAYS

START OF RECORD 30 MN 16 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	003	010	002																							15
10- 19	006	005	001																							12
20- 29	003	006	001																							10
30- 39	003	001																								4
40- 49	004	006																								10
50- 59	006	005																								11
60- 69	004	008	003																							15
70- 79	002	010	004																							16
80- 89	007	010	007	005	001																					30
90- 99	004	011	009	011	004	003	003	002																		47
100-109	003	011	023	016	016	018	024	024	024	003	004	001														167
110-119	007	013	020	025	037	031	034	031	044	029	013	011	001	001												297
120-129	008	016	023	028	020	027	011	015	014	011	005	004	001													183
130-139	008	014	013	009	004	005	004	001																		58
140-149	007	014	011	007	004	001																				44
150-159	004	011	004	003	001																					23
160-169	003	008	004	001																						16
170-179	001	005	001																							7
180-189	001	008	002																							11
190-199	003	004	001																							8
200-209	007	002																								9
210-219	003	004																								7
220-229	003	009	003																							15
230-239	005	006																								11
240-249	005	013																								18
250-259	008	018	007	001					001																	35
260-269	005	019	013	004																						41
270-279	004	024	018	009	011	003	001	001	001	001																73
280-289	005	034	037	037	040	024	030	022	013	009	010	011	004	006	005	001										288
290-299	005	023	054	054	045	033	043	035	036	036	030	020	012	017	009	004	001									457
300-309	007	017	031	022	021	019	009	007	006	005		001														145
310-319	009	017	016	012	010	002																				66
320-329	007	013	011	014	001																					46
330-339	008	017	008	002																						35
340-349	007	011	007	001																						26
350-359	001	016	002																							19
		419		261		166		138		94		48		24		5		0		0		0		0		2275
	176		336		215		159		139		62		18		14		1		0		0		0		0	

NUMBER OF ZERO RATES 0

JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM

△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL

STN	DEPTH	AREA	JULIAN DATE	NO DAYS
111	015M	7000	107/73	23

SCALE
10 MILES

N

TIDAL CURRENT ELLIPSE

STN 111 DEPTH Ø15 JUAN DE FUCA ST. 48 23.3 N 124 3.Ø W

STARTING TIME OF ANALYSED DATA ØØ MIN 18 HR 17 DAY Ø4 MON 73 YR

LENGTH OF DATA 23 DAYS 13 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	7.1	.Ø	163.2	.Ø
O1	21.6	-.1	153.Ø	248.9
K1	38.7	1.4	157.1	244.4
OO1	.9	.1	6.3	317.9
M2	57.1	-4.3	156.3	242.8
S2	13.6	.1	153.9	252.8
M4	2.Ø	-.2	162.Ø	178.9
MS4	1.Ø	.1	113.5	207.2
M6	1.2	.8	109.Ø	259.5
M8	1.6	-.2	177.9	332.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 111 DEPTH 015 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973

MAJOR COMPONENT									
2	-12	-6	-5	-12	-8	-5	-2	10	15
MINOR COMPONENT									
-1	-2	-4	0	1	1	1	5	5	-1

APR. 28 1973

MAJOR COMPONENT									
0	-14	-9	-6	-7	-17	-14	-9	-7	-7
MINOR COMPONENT									
-5	-5	-2	-2	-3	-3	-5	-3	-3	0

MAY 8 1973

MAJOR COMPONENT		
-12	-17	-18
MINOR COMPONENT		
0	0	0

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

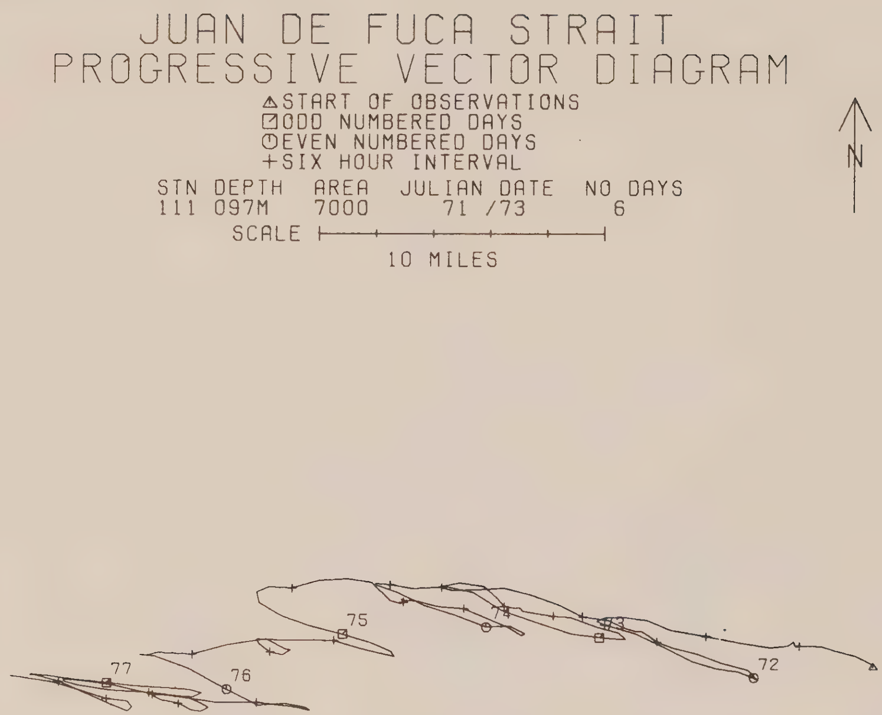
STN 111 DEPTH 097 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W LENGTH OF RECORD= 7 DAYS

START OF RECORD 00 MN 01 HR 12 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		001	001																							2
10- 19	001			001																						2
20- 29																										0
30- 39		001		001	001																					3
40- 49	001		003	001	001																					6
50- 59			001		001	001																				3
60- 69		001																								1
70- 79	002			003	002				003			001														11
80- 89	001	001	005	004	004	002	001	004	002	005	003															32
90- 99		001	002	001	006	005	001	006	006	007	006	004	003	001												49
100-109		002	001		003	005	012	009	010	011	008	017	010	005	004	002										99
110-119	001		002	003	003	004	002	003	003	004	015	010	007	005	003		001									66
120-129	001	001	005	003	006	004	002	002		001	005	003	003	002	002	001	001	001								43
130-139		001	003	002		001																				7
140-149	001	005			002			001																		9
150-159			001	001	001	001																				4
160-169		002		001	001	001																				5
170-179		003		001																						4
180-189	002	001	002	001																						6
190-199																										0
200-209		004	001	001																						6
210-219		001																								1
220-229			003	001																						4
230-239	002	003	003	001	004																					13
240-249	001	004	003		003				002	002				001												16
250-259	004	005	001	001		001		003	003	003		003	001	004	003											32
260-269		003	005	006	007	004	005	005	003	012	003			001	003	001										58
270-279	004	001	007	006	015	017	008	015	025	021	013	008	006	010	007	014	008									185
280-289	003	001	003	007	016	008	006	012	024	021	016	013	007	005	007	004										153
290-299		003	004	006	004	005	005	003	004	009	007	002	001													53
300-309	004	002		002	001	005	005	003	002	002	002															28
310-319		002	002	005	009		005	003	001	009																36
320-329	001	004	001		003	003																				12
330-339	001	001	001	003			001	001																		8
340-349			001	002																						3
350-359		001	002	001																						4
	30	55	63	65	93	67	53	70	88	107	78	61	38	34	29	22	10	1	0	0	0	0	0	0	0	964

NUMBER OF ZERO RATES 29


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
111 097M 7000 71 /73 6
SCALE
10 MILES
N
72
73
74
75
76
77

TIDAL CURRENT ELLIPSE

STN 111 DEPTH 097 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W

STARTING TIME OF ANALYSED DATA 00 MIN 03 HR 12 DAY 03 MON 73 YR

LENGTH OF DATA 6 DAYS 17 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	7.9	.0	4.5	180.0
K1	25.4	2.3	164.5	262.0
M2	45.6	2.8	167.9	263.7
M4	3.7	-1.4	49.5	357.6
M6	3.0	-.7	165.2	322.7
M8	1.7	-.1	32.3	129.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 111 DEPTH 097 JUAN DE FUCA ST. 48 23.3 N 124 3.0 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 13 1973

MAJOR COMPONENT					
	-13	-8	-10	-7	-7
MINOR COMPONENT					
	-3	-2	-5	-7	-4

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

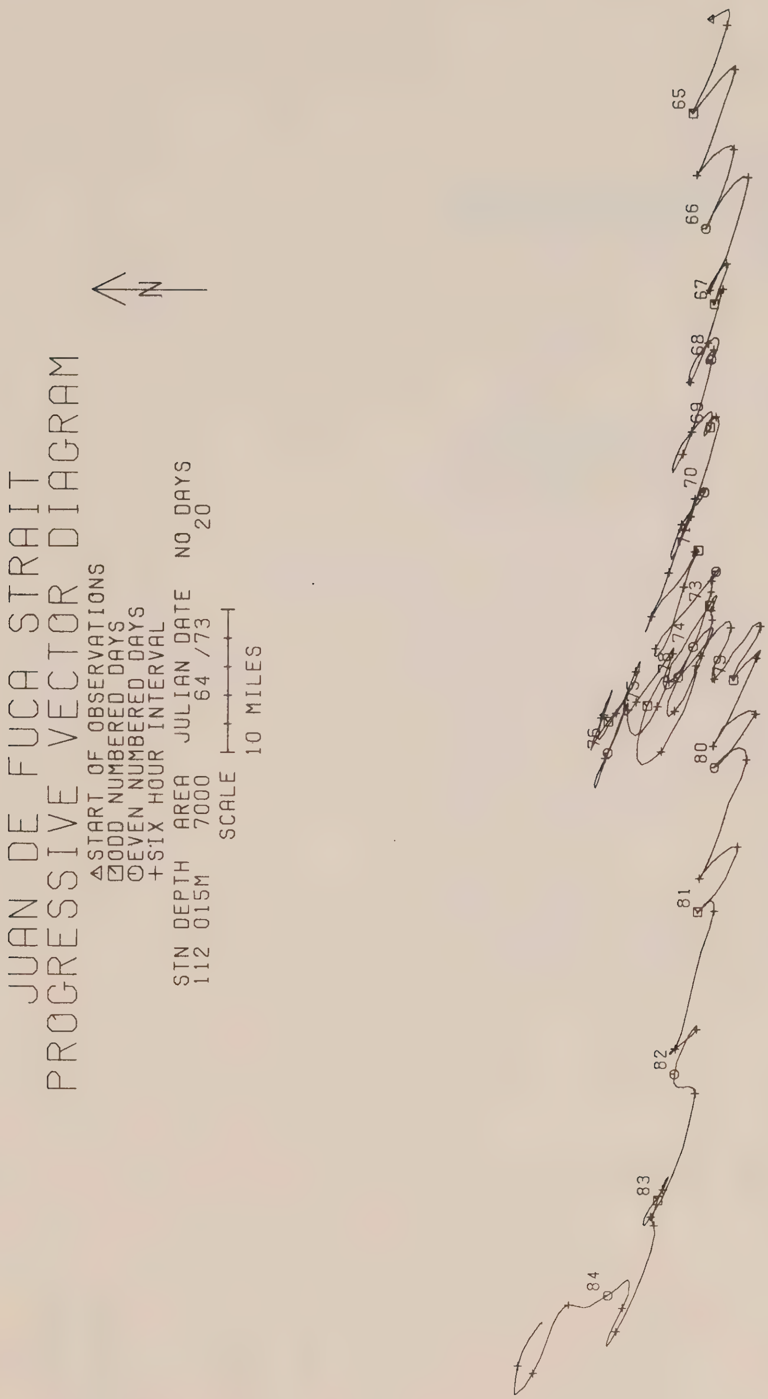
STN 112 DEPTH 015 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W LENGTH OF RECORD= 21 DAYS

START OF RECORD 56 MN 14 HR 05 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		008	001	002	004																					15
10- 19		001	002	004	003																					10
20- 29		006		002	002	001																				11
30- 39		008	001		002																					11
40- 49		005				001																				6
50- 59		005	001		001	002																				9
60- 69		008	001	001			001	001																		12
70- 79		009	006	004		002	002	002	002																	27
80- 89		010	008	003	003	002	002	005	002	002																37
90- 99		006	010	004	009	011	004	004	008	007	005	003				001										72
100-109		016	009	007	003	008	009	011	004	005	017	012	006	004	007	003										121
110-119		010	007	006	013	017	012	013	017	019	018	028	017	010	012	017	003	001								220
120-129		010	010	012	011	022	012	019	019	020	016	029	023	017	018	011	006	001								256
130-139		011	008	013	004	015	016	016	009	009	018	016	013	016	015	006	003									188
140-149		010	005	005	002	013	009	011	011	005	006	005	001	002												85
150-159		007	002	002	003	012	008	006	004	001	001	001	002													49
160-169		006	003	006	010	005	002		001																	33
170-179		003	003	002	003	003																				14
180-189		009		011	004		001																			25
190-199		008	001	003	001	002	001																			16
200-209		006	004	004		001																				15
210-219		003	002	006		001																				12
220-229		008	007	005																						20
230-239		004	001	005	001	001																				12
240-249		011	006	005	004	001																				27
250-259		012	007	006	005	005	002																			37
260-269		013	010	009	012	010	005	001	001	001																62
270-279		018	008	010	007	025	012	009	009	003	002	001	002				001				001		002			110
280-289		019	020	009	028	029	028	031	020	016	018	032	022	017	022	031	021	020	021	021	025	008	013	003	001	475
290-299		010	014	009	012	021	013	015	032	018	021	050	018	020	018	025	030	019	015	017	011	001		001		390
300-309		017	012	011	015	017	019	015	027	014	013	022	013	013	007	004	002	004	001	001						227
310-319		015	009	012	014	015	008	006	005	005	007	005	001	005												107
320-329		014	003	010	006	007	010	006	003	008			001													68
330-339		006	002	004	002	002	001		001																	18
340-349		005	003	001	002	002																				13
350-359		005	001	002	006	001																				15
	0	322	187	195	192	254	177	171	175	133	142	204	119	104	99	98	66	45	37	39	37	9	15	4	1	2825

NUMBER OF ZERO RATES 115


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
□ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 015M 7000 64 /73 20
SCALE
10 MILES
N
65
66
67
68
69
70
80
81
82
83
84

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 015 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W

STARTING TIME OF ANALYSED DATA 00 MIN 17 HR 05 DAY 03 MON 73 YR

LENGTH OF DATA 20 DAYS 5 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.9	.0	171.9	.0
O1	17.8	1.0	156.6	242.8
K1	23.5	-.6	156.7	262.2
OO1	1.7	.5	7.6	182.8
M2	51.3	-5.1	152.7	245.9
S2	16.5	-.6	151.0	262.0
M4	1.8	.3	9.8	282.2
MS4	1.4	-.3	49.5	49.1
M6	2.0	-1.1	16.9	98.4
M8	.7	-.6	60.5	40.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 015 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 6 1973

MAJOR COMPONENT									
-14	-10	-7	-9	-10	-9	-3	-5	-8	-11
MINOR COMPONENT									
-9	-6	-3	-4	-4	-3	-3	-1	-1	2

MAR. 16 1973

MAJOR COMPONENT									
-9	4	12	5	-13	-19	-23	-18	-16	-9
MINOR COMPONENT									
2	3	-7	-8	-3	-7	-6	-6	0	8

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

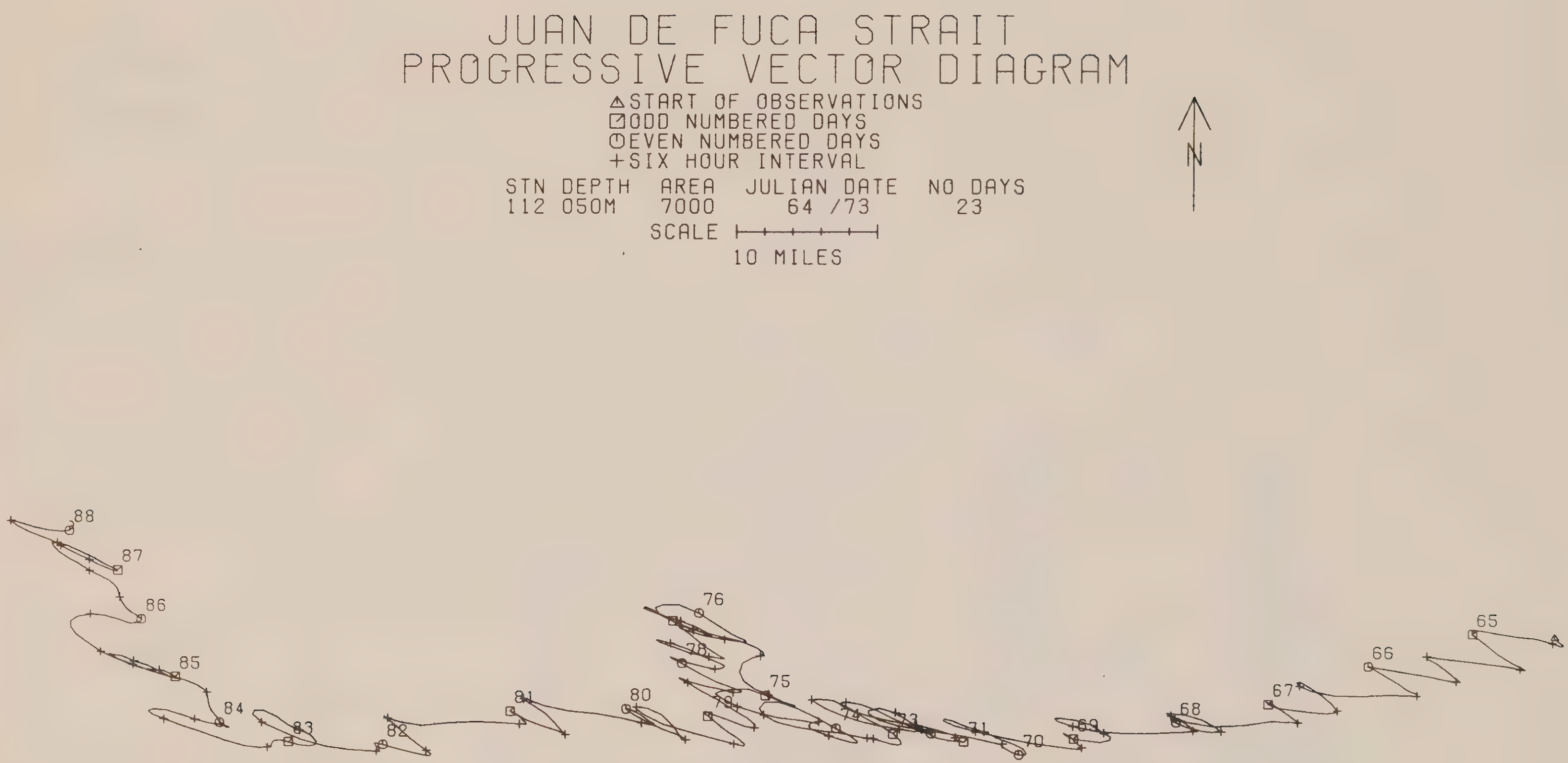
STN 112 DEPTH 050 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W LENGTH OF RECORD= 24 DAYS

START OF RECORD 35 MN 15 HR 05 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		003	002	003	001																					9
10- 19	005	003	004	002		001	002	001																		18
20- 29	001	006	001	003			002	001																		14
30- 39	002	003	002	002	001		001	001																		12
40- 49	001	005	004	006	002			002																		20
50- 59	001	003	004	003	001		002	001	001																	16
60- 69	001	008	005	007	007	001	003	003	001																	36
70- 79	005	004	005	004	006	004	006	008	002	001	002		001													48
80- 89	006	006	004	003	005	008	006	006	006	006	005	002	001	002	001		001									68
90- 99	006	007	007	006	011	011	005	013	019	009	011	004	004	005	001		001									120
100-109	003	006	006	009	015	016	013	019	026	013	022	029	020	027	003											227
110-119		003	004	012	004	011	010	016	022	026	018	030	027	021	009	006	004	002								225
120-129	002	007	008	011	017	012	017	013	031	021	031	031	021	016	015	011	009	004								277
130-139	007	005	011	008	010	018	014	014	015	016	012	005	004	004	002	003	003									151
140-149	002	004	006	005	007	003	004		001	002	004		001													39
150-159	001	002	009	004	002		001		002	002																23
160-169	004	005	001	002	003		001																			16
170-179	002	004	004	001																						11
180-189	003	005	004																							12
190-199	003	006	002	001	001																					13
200-209	003	006	001	001	001																					12
210-219	005	006	001		001																					13
220-229	007	009	008	001		001																				26
230-239	003	004	004	001																						12
240-249	007	011	011	006	002		001																			38
250-259	004	013	008	006	005	001	001	001																		39
260-269	002	012	013	015	016	013	009	006	002	004	001	002	002	003	004	001	003	002	004	005	016	009	005			149
270-279	002	006	008	015	026	015	016	015	025	013	010	012	012	018	013	013	014	017	012	009	008	004	001			284
280-289	002	011	011	013	018	019	029	024	036	040	044	044	030	037	037	031	033	019	029	017	010	003				537
290-299	006	016	019	025	015	029	027	046	039	033	036	031	023	035	016	008	009	004	004							421
300-309	003	003	008	017	025	013	014	017	011	007	010	004	005	001			001									139
310-319	002	009	014	028	013	008	008	002	005	003	003															95
320-329	004	007	013	006	009	008	001	004	001																	53
330-339	004	006	010	005	011	006	003	003																		48
340-349		002	007	006	007	002	001																			25
350-359	004	006	008	005	001	001	001	001																		27
		222		242		201		217		196		194		169		73		48		31		16		0		3273
	113		237		243		198		245		209		151		101		78		49		34		6		0	

NUMBER OF ZERO RATES 119


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 050M 7000 64 /73 23
SCALE
10 MILES
N
65
66
67
68
69
70
71
73
74
75
76
78
79
80
81
82
83
84
85
86
87
88

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 050 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W

STARTING TIME OF ANALYSED DATA 00 MIN 17 HR 05 DAY 03 MON 73 YR

LENGTH OF DATA 23 DAYS 9 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.8	.0	175.4	.0
O1	17.2	1.4	161.0	239.3
K1	22.7	-1.7	162.0	258.1
OO1	2.0	.7	22.0	192.0
M2	51.3	-5.7	161.5	247.8
S2	18.7	-.5	160.5	269.8
M4	2.9	-.9	60.3	308.2
MS4	2.5	-.8	67.4	335.8
M6	1.3	-.4	36.6	98.4
M8	.6	-.3	36.6	95.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 050 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 6 1973

MAJOR COMPONENT									
-11	-11	-11	-13	-8	-10	-6	-6	-9	-11
MINOR COMPONENT									
-11	-12	-8	-8	-6	-2	-1	-2	-3	-1

MAR. 16 1973

MAJOR COMPONENT									
-15	-3	5	8	-11	-15	-14	-13	-11	-10
MINOR COMPONENT									
7	-2	-6	-5	-5	-8	-13	-6	-2	3

MAR. 26 1973

MAJOR COMPONENT		
-9	-7	-10
MINOR COMPONENT		
6	5	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

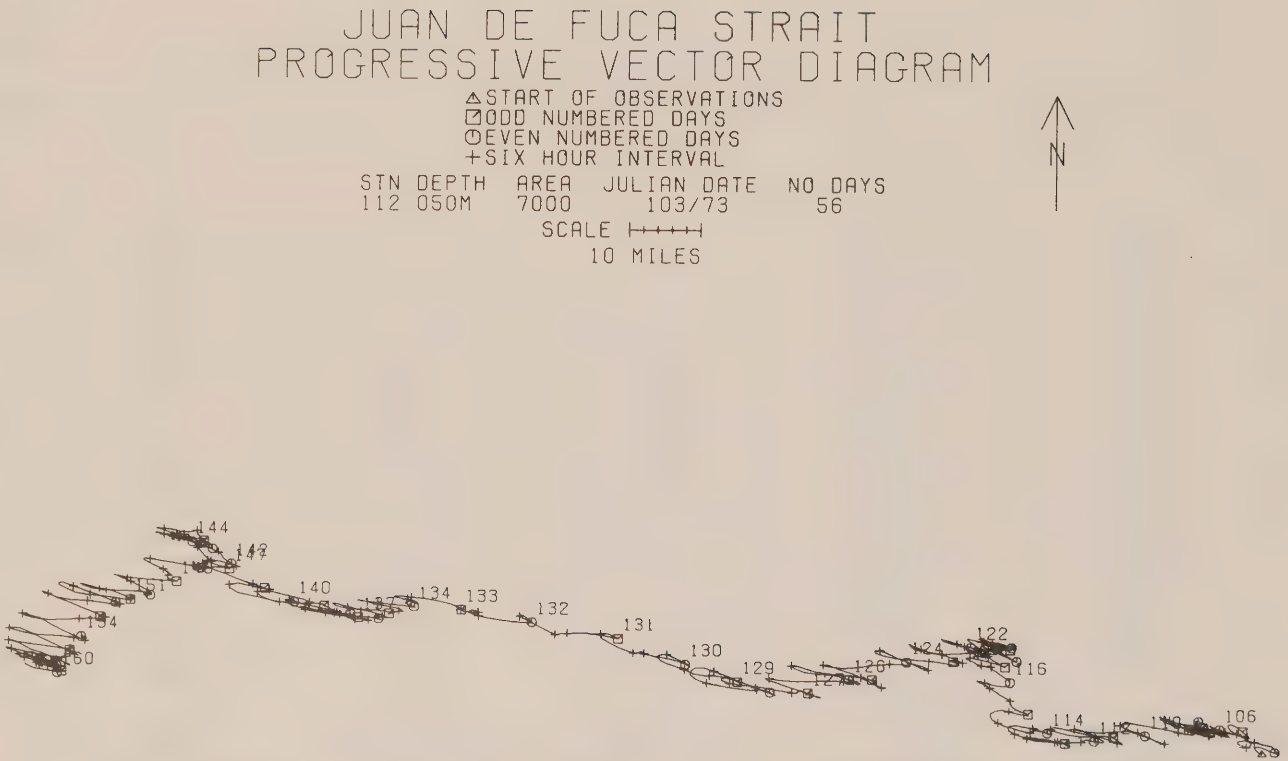
STN 112 DEPTH 050 JUAN DE FUCA ST. 48 21.5 N 124 2.5 W LENGTH OF RECORD= 57 DAYS

START OF RECORD 30 MN 18 HR 13 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	009	005																								14
10- 19	017	013	002	001																						33
20- 29	014	010	001	002																						27
30- 39	006	005	001																							12
40- 49	019	018	006	003	001																					47
50- 59	025	014	012	003																						54
60- 69	016	018	009	004	002																					49
70- 79	023	024	013	005	006																					71
80- 89	037	052	037	029	016	009		001																		181
90- 99	048	058	076	073	067	059	067	049	026	011																534
100-109	028	042	064	077	094	078	090	079	040	033	011	001														637
110-119	044	100	108	095	120	107	101	080	053	054	038	007	002													909
120-129	042	087	092	032	034	029	016	012	003	001	005	001	003													357
130-139	046	048	022	014	006	002																				138
140-149	015	016	002																							33
150-159	030	040	001																							71
160-169	017	005	002																							24
170-179	018	008	002																							28
180-189	018	008	001																							27
190-199	013	002																								15
200-209	017	007	001																							25
210-219	021	016																								37
220-229	019	020	001																							40
230-239	065	061	027	006																						159
240-249	031	028	013	001																						73
250-259	029	030	008	001																						68
260-269	044	077	068	033	017	012	020	017	009	023	025	022	001													368
270-279	054	093	088	088	063	073	090	115	108	106	083	038	005													1004
280-289	035	069	109	100	057	071	100	077	074	061	014		001													768
290-299	047	109	181	160	129	089	079	046	030	007	005															882
300-309	039	105	146	130	099	021	005	006	001																	552
310-319	031	049	047	027	012	003																				169
320-329	039	034	040	013	006																					132
330-339	025	021	012	001																						59
340-349	011	013	008	002																						34
350-359	022	027	006	003	002																					60
	1014	1332	1206	903	731	553	568	482	344	296	181	69	12	0	0	0	0	0	0	0	0	0	0	0	0	7691

NUMBER OF ZERO RATES 439


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 050M 7000 103/73 56
SCALE
10 MILES
N
144
140
134
133
132
131
130
129
126
124
122
116
114
106
154
160

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 050 JUAN DE FUCA ST. 48 21.5 N 124 2.5 W

STARTING TIME OF ANALYSED DATA 00 MIN 20 HR 13 DAY 04 MON 73 YR

LENGTH OF DATA 56 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.6	.0	176.3	.0
Q1	3.6	1.1	173.1	238.6
O1	18.3	1.4	166.0	247.2
NO1	3.0	.6	159.3	297.6
K1	34.8	.3	169.5	245.5
J1	3.1	.2	9.2	124.4
OO1	.8	.4	94.6	233.2
MU2	2.6	-.5	5.4	304.4
N2	9.8	-.6	156.3	233.4
M2	46.5	-3.3	163.5	242.1
L2	2.0	.7	172.4	32.7
S2	12.3	-.7	177.5	250.8
MN4	.7	.3	126.6	350.2
M4	1.8	-.5	84.2	268.5
MS4	1.6	-.1	51.4	254.7
M6	.8	.0	139.9	69.6
M8	.8	-.2	131.5	327.0

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 050 JUAN DE FUCA ST. 48 21.5 N 124 2.5 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 14 1973										
MAJOR COMPONENT										
-12	-6	-4	-1	-1	-11	-8	-5	-8	-6	
MINOR COMPONENT										
2	-3	-2	1	-3	-7	-5	-3	-5	1	
APR. 24 1973										
MAJOR COMPONENT										
-8	-9	-4	2	-4	0	-4	-7	-2	-11	
MINOR COMPONENT										
2	6	4	3	2	1	-2	-3	-6	-6	
MAY 4 1973										
MAJOR COMPONENT										
-7	-6	-8	-11	-10	-17	-22	-26	-20	-14	
MINOR COMPONENT										
-10	-3	-9	-5	-1	-2	-2	-7	-6	-5	
MAY 14 1973										
MAJOR COMPONENT										
-5	-3	-5	-3	-7	-8	-10	-12	-10	-4	
MINOR COMPONENT										
-5	-2	-3	0	-1	-3	0	2	3	-2	
MAY 24 1973										
MAJOR COMPONENT										
2	4	7	-8	-5	-6	-5	-4	-2	-2	
MINOR COMPONENT										
1	0	-3	-4	-7	-7	-4	-3	-6	-8	
JUNE 3 1973										
MAJOR COMPONENT										
-1	0	-2	1	2	-1					
MINOR COMPONENT										
-5	-4	-3	1	-1	-1					

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

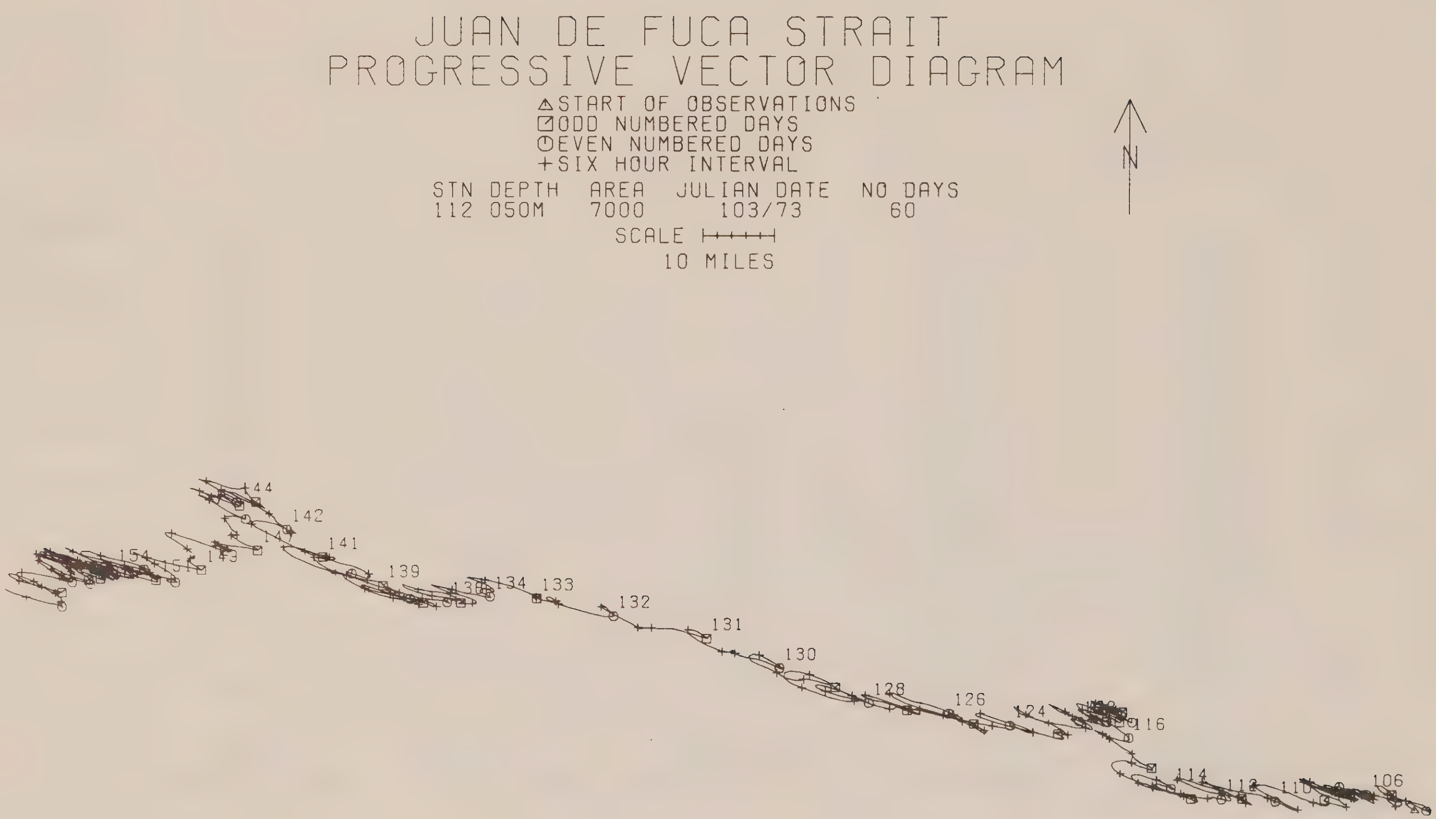
STN 112 DEPTH 050 JUAN DE FUCA ST. 48 21.5 N 124 2.5 W LENGTH OF RECORD= 61 DAYS

START OF RECORD 30 MN 18 HR 13 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	010	015																								25
10- 19	015	011	004	002																						32
20- 29	006	007	002	002																						17
30- 39	004	007																								11
40- 49	015	009	002	001																						27
50- 59	012	014	003	004																						33
60- 69	013	016	004	003	001																					37
70- 79	016	020	012	006	004	001																				59
80- 89	017	024	021	009	005	004				001																81
90- 99	016	031	034	021	015	009	015	010	015	003	002	002	001		001											175
100-109	022	031	036	042	049	040	043	063	048	021	026	024	009	001	001											456
110-119	017	036	064	065	082	085	081	079	054	027	015	007														612
120-129	023	042	064	077	062	061	046	032	019	002																428
130-139	021	043	068	041	034	018	009																			234
140-149	021	044	031	010	002	002																				110
150-159	003	031	010	005		001																				50
160-169	016	031	006																							53
170-179	017	017	002																							36
180-189	014	013	002																							29
190-199	019	011	001																							31
200-209	019	016																								35
210-219	010	022	001																							33
220-229	018	019																								37
230-239	024	036	004																							64
240-249	019	033	017																							69
250-259	023	052	021	002																						98
260-269	021	065	050	025	014	001	001																			177
270-279	023	059	063	044	029	030	023	033	024	015	008	005	003	002												361
280-289	023	054	087	092	087	062	080	092	083	085	053	042	033	009												882
290-299	021	054	103	112	097	073	072	069	057	034	024	015	004	002												737
300-309	020	034	081	092	085	033	021	018	008	002	002	001														397
310-319	017	033	056	051	022	006	003																			188
320-329	015	019	025	016	002																					77
330-339	013	023	018	006	002																					62
340-349	010	015	008	002																						35
350-359	019	011	005	001																						36
	592	998	905	731	592	426	394	396	308	190	130	96	50	14	2	0	0	0	0	0	0	0	0	0	0	5824

NUMBER OF ZERO RATES 0


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 050M 7000 103/73 60
SCALE
10 MILES
N
106
110
112
114
116
124
126
128
130
131
132
133
134
139
141
142
143
154

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 050   JUAN DE FUCA ST.   48 21.5 N 124 2.5 W

STARTING TIME OF ANALYSED DATA   00 MIN 20 HR 13 DAY 04 MON 73 YR

LENGTH OF DATA   60 DAYS 13 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.9	.0	171.4	.0
Q1	4.5	.2	171.4	242.2
O1	19.4	-.5	160.2	244.6
NO1	3.4	-.6	158.2	290.6
K1	38.5	-.8	163.2	245.5
J1	2.8	-.4	9.4	117.3
OO1	.5	.2	75.0	226.5
MU2	2.8	-.4	167.9	119.8
N2	11.6	-1.0	161.0	229.7
M2	51.8	-3.3	158.3	240.8
L2	1.5	.3	160.7	54.5
S2	12.6	-.4	170.8	253.4
MN4	.4	-.2	45.7	104.8
M4	1.4	-.7	115.1	217.5
MS4	1.6	-.6	70.8	210.3
M6	.4	.1	175.8	98.4
M8	.4	.1	95.6	296.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 050 JUAN DE FUCA ST. 48 21.5 N 124 2.5 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 14 1973

MAJOR COMPONENT	-12	-7	-6	-2	-2	-12	-9	-6	-8	-7
MINOR COMPONENT	1	-4	-2	1	-5	-6	-4	-2	-4	0

APR. 24 1973

MAJOR COMPONENT	-8	-10	-6	3	-4	0	-4	-7	-3	-13
MINOR COMPONENT	3	5	4	1	1	-1	-4	-4	-6	-3

MAY 4 1973

MAJOR COMPONENT	-10	-8	-11	-12	-11	-17	-24	-29	-23	-14
MINOR COMPONENT	-5	0	-4	-3	0	-2	-1	-6	-6	-5

MAY 14 1973

MAJOR COMPONENT	-6	-4	-6	-4	-8	-9	-10	-13	-12	-6
MINOR COMPONENT	-6	-1	-3	-1	0	-1	1	3	3	-2

MAY 24 1973

MAJOR COMPONENT	1	3	7	-8	-5	-6	-5	-5	-3	-4
MINOR COMPONENT	-1	-3	-7	-4	-8	-7	-1	2	-3	-2

JUNE 3 1973

MAJOR COMPONENT	-1	0	-2	1	2	-3	-1	-5	-1	2
MINOR COMPONENT	-2	-1	1	0	-2	-2	1	-3	-4	-4

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

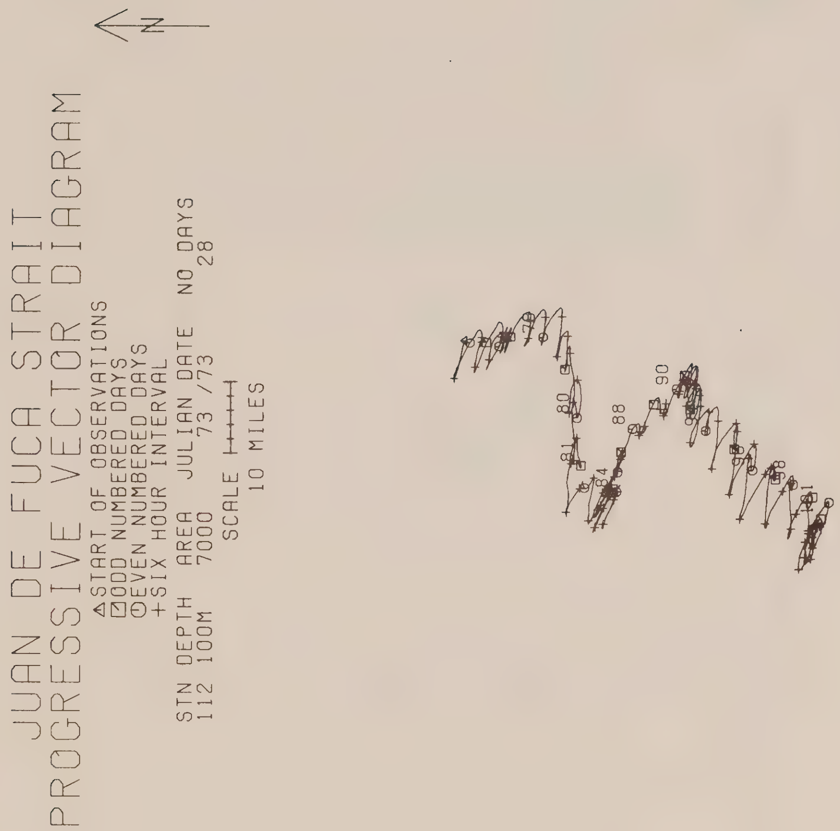
STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W LENGTH OF RECORD= 29 DAYS

START OF RECORD 00 MN 13 HR 14 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	007	003	007	002																					22
10- 19	004	006	003	005	005																					23
20- 29	007	009	005	004	001																					26
30- 39	003	007	004	007	003																					24
40- 49	004	004	003	005	003	001																				20
50- 59	005	007	002	009	007	002																				32
60- 69	006	003	007	006	013	004	002																			41
70- 79	005	005	011	017	023	013	012	002	001	002	001	001	001													94
80- 89	001	007	004	009	017	010	008	006	010	005	005	008	003	002												95
90- 99	001	006	008	008	017	010	012	018	017	010	012	011	015	010	003	001										159
100-109		010	012	014	019	013	014	021	025	027	042	040	041	039	024	019	003	001	001	001						366
110-119	002	006	007	015	028	023	026	028	039	039	045	052	051	039	040	022	022	013	010	008	001					516
120-129	003	004	014	017	025	016	015	013	017	020	019	021	017	025	019	014	005	006	007	001	002					280
130-139	002	009	013	013	020	010	011	007	004	008	006	003	002	004	003	001		001								117
140-149	003	005	011	017	015	007	002	004		001	001															66
150-159	003	003	010	008	005	002	002	001	001																	35
160-169	002	004	014	007	007	001	001																			36
170-179	002	007	015	010	005	001																				40
180-189	002	008	005	005																						20
190-199		002	005	006	003																					16
200-209	002	010	013	005	002		001																			33
210-219	002	003	005	010																						20
220-229	007	003	007	005	004	001	001																			28
230-239	001	006	010	008	005	004																				34
240-249		006	005	008	011	004	001		001																	36
250-259	003	002	013	019	015	012	005	008	007	001	003		001						001	003	001	001				95
260-269	004	011	022	012	023	025	029	019	020	019	022	005	014	016	014	014	016	011	011	007	003					317
270-279	006	007	007	008	010	030	024	025	020	028	033	031	030	043	037	028	025	015	025	016	011	007	003			469
280-289	002	013	016	020	023	027	032	030	036	042	047	030	026	036	021	008	006	010	004	001						430
290-299	001	012	012	009	025	023	029	021	023	023	018	015	011	005	002											223
300-309	004	008	014	015	022	022	015	013	016	013	003	003	004													152
310-319	001	006	018	013	014	005	008	009		001																75
320-329	005	010	014	004	012	005	004	001																		55
330-339	006	002	010	008	003	003	001																			33
340-349	005	006	009	004	003	002																				23
350-359	004	009	004	003	003	001																				24
	111	233	335	340	393	277	255	226	237	239	257	220	216	219	163	107	77	57	59	37	18	8	3	0	0	4087

NUMBER OF ZERO RATES 76


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 100M 7000 73 /73 28
SCALE
10 MILES
N
80
81
88
90

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W

STARTING TIME OF ANALYSED DATA 00 MIN 15 HR 14 DAY 03 MON 73 YR

LENGTH OF DATA 28 DAYS 17 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	4.2	.0	58.5	180.0
Q1	1.4	.5	179.5	276.0
O1	14.7	2.0	149.0	235.5
NO1	2.6	.9	166.8	266.8
K1	23.1	.1	158.6	240.2
J1	1.1	-.4	20.8	137.1
OO1	2.5	1.0	147.4	348.7
MU2	3.3	-1.6	27.0	3.5
N2	11.5	-4.1	170.8	236.2
M2	51.1	-4.0	166.7	241.3
L2	1.2	.9	94.7	326.2
S2	15.4	-.8	169.9	257.0
MN4	.5	-.1	103.4	272.1
M4	1.5	.2	64.6	307.4
MS4	1.6	.7	127.0	30.3
M6	1.1	.5	64.0	135.7
M8	1.2	-.6	122.3	14.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 15 1973

MAJOR COMPONENT	2	1	5	5	-5	-10	-12	-6	3	1
MINOR COMPONENT	-5	-3	-2	-9	-10	-9	-6	-4	-8	-2

MAR. 25 1973

MAJOR COMPONENT	-1	4	5	7	9	7	4	-1	-6	-3
MINOR COMPONENT	1	1	1	0	-2	-4	-1	-3	-4	-7

APR. 4 1973

MAJOR COMPONENT	0	-3	1	1	-1	0	-6	-5
MINOR COMPONENT	-10	-8	-7	-5	-7	-5	0	1

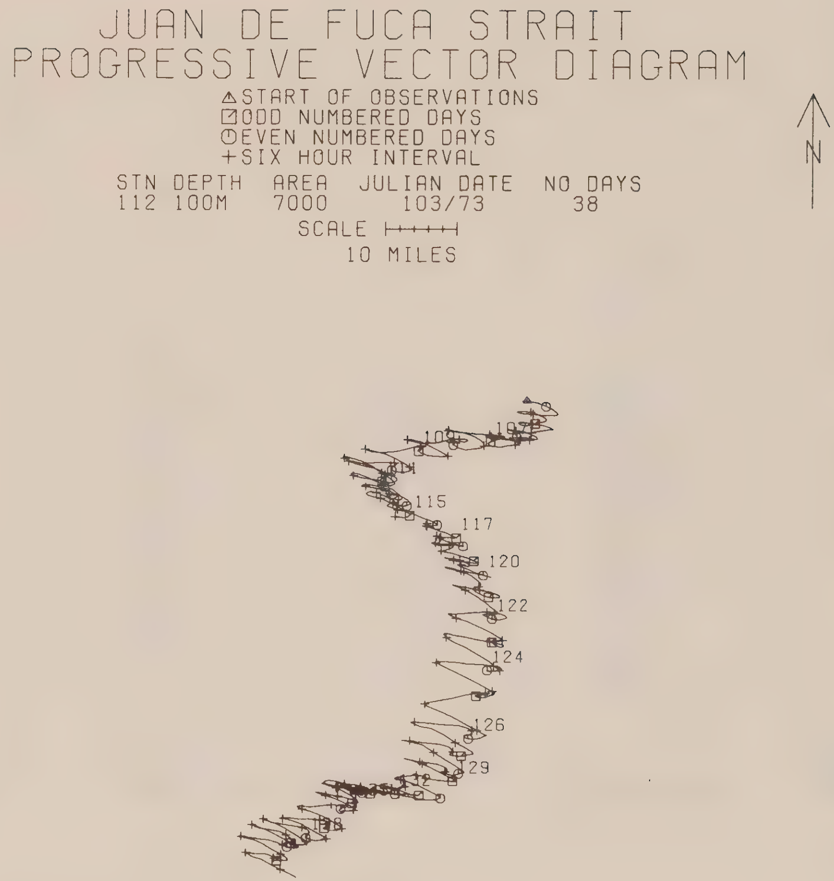
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.2 N 124 2.8 W LENGTH OF RECORD= 39 DAYS
START OF RECORD 10 MN 19 HR 13 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	007	010	003	006		001																			30
10- 19	003	006	005	010	004	005																				33
20- 29	005	008	015	010	009	002																				49
30- 39	011	015	014	010	008																					58
40- 49	004	009	008	023	005	002																				51
50- 59	005	013	020	019	019	004	001																			81
60- 69	007	014	015	017	027	008	005	004	001																	98
70- 79	006	007	014	012	016	020	019	007	008																	109
80- 89	003	006	010	015	014	013	013	009	011	002	003															99
90- 99	002	011	009	010	022	019	024	022	031	031	017	016	009	009	002	002										236
100-109	002	014	014	011	027	022	026	022	045	040	036	049	057	059	026	022	010	005	006		002					495
110-119	007	011	016	021	025	029	031	028	032	042	040	037	039	073	058	057	037	020	014	018	012	006	002			655
120-129	003	005	015	012	018	010	016	027	014	020	020	006	012	015	008	011	015	003	013	005	006	004	002			260
130-139	007	010	009	012	026	011	016	007	010	005	002	003	003	001	002	001	001					001				127
140-149	002	013	013	012	015	003	002																			60
150-159	004	005	008	003	008	002																				30
160-169	002	012	005	007	002																					28
170-179	006	006	003	003	001																					19
180-189	004	007		003	001																					15
190-199	002	005	005																							12
200-209	006	012	011	004																						33
210-219	002	006	008	002																						18
220-229	004	008	010	009	003																					34
230-239	003	005	015	014	011	005	002		001																	56
240-249	010	011	007	011	015	011	005	008	008	002																88
250-259	005	010	014	019	023	033	028	017	021	012	008	003	002	002	002	002	001	002	001	005	012					222
260-269	004	017	027	031	049	044	039	044	039	036	033	030	014	020	018	027	019	017	014	008	008					538
270-279	003	022	021	032	041	043	032	040	048	039	029	037	052	050	041	033	028	028	011	007	007	001				645
280-289	019	014	024	033	038	037	044	041	038	042	037	041	040	036	018	005	008	005	007							527
290-299	005	007	016	023	037	030	019	019	023	017	015	009	001	001	001											223
300-309	005	015	014	018	033	017	011	011	012	003	006	001														146
310-319	002	010	015	011	011	006	007	001	002																	65
320-329	004	009	013	008	008	004	002																			48
330-339	005	007	009	009	005	002	001																			38
340-349	002	006	004	007	003																					22
350-359	001	006	005	005	006																					23
	168	349	421	449	536	382	344	307	344	291	246	232	229	266	176	160	119	80	66	43	47	12	4	0	0	5271

NUMBER OF ZERO RATES 219


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 100M 7000 103/73 38
SCALE
10 MILES
N
115
117
120
122
124
126
29

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 2.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 21 HR 13 DAY 04 MON 73 YR

LENGTH OF DATA 37 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	4.3	.0	60.3	180.0
Q1	1.5	.5	160.7	211.6
O1	13.4	1.6	144.8	239.6
NO1	2.9	.5	175.4	290.5
K1	30.6	1.5	156.2	239.6
J1	2.3	1.2	179.1	279.2
OO1	1.3	-.7	57.3	258.9
MU2	2.0	-.8	161.9	151.7
N2	12.6	-2.0	165.4	240.2
M2	47.8	-2.2	171.7	255.2
L2	2.2	-1.7	173.6	29.1
S2	11.7	-1.1	172.1	259.3
MN4	1.2	.1	91.4	331.9
M4	2.2	1.3	95.3	332.4
MS4	1.2	.4	101.6	358.3
M6	1.1	-.1	78.0	201.8
M8	.7	-.4	77.3	174.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 100 JUAN DE FUCA ST. 48 21.2 N 124 2.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 14 1973

MAJOR COMPONENT	0	-2	-6	-9	-8	-5	-1	1	4	4
MINOR COMPONENT	-7	-6	-5	-5	-6	-8	-4	-1	-2	0

APR. 24 1973

MAJOR COMPONENT	1	8	7	2	3	4	5	4	3	4
MINOR COMPONENT	-3	1	-1	-1	-3	-3	-5	-5	-6	-8

MAY 4 1973

MAJOR COMPONENT	2	4	0	1	-1	-2	-7	-7	-7	-2
MINOR COMPONENT	-8	-12	-5	-5	-3	-6	-3	-3	-3	-1

MAY 14 1973

MAJOR COMPONENT	-1	-2	-2	-3	-4	0	-1
MINOR COMPONENT	-4	-3	-7	-5	-3	-1	-5

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

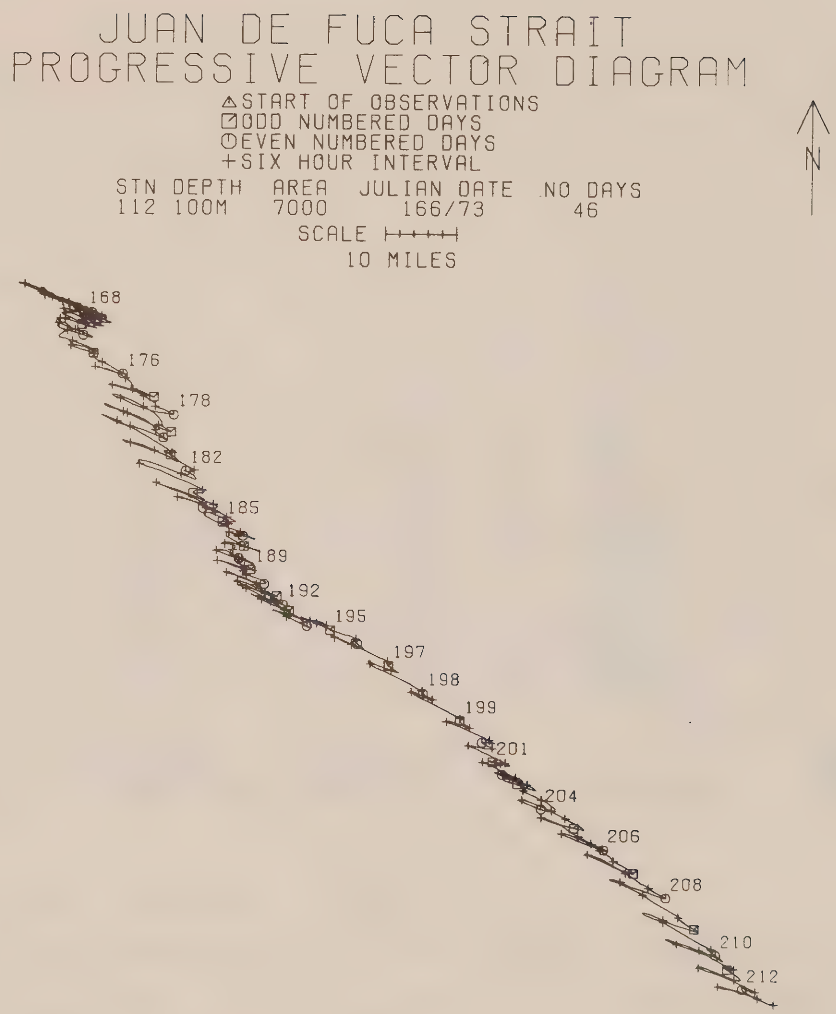
STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W LENGTH OF RECORD= 47 DAYS

START OF RECORD 45 MN 07 HR 15 DY 06 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	005																									5
10- 19	002	001																								3
20- 29	009	004	001																							14
30- 39	003	001																								4
40- 49	003																									3
50- 59	008	010	002																							20
60- 69	006	007	003																							16
70- 79	009	005	007	002																						23
80- 89	018	010	016	004	002	002																				52
90- 99	016	027	023	021	019	004	003	001		001																115
100-109	024	060	068	065	043	039	030	021	014	010	010	007	002	001												394
110-119	035	096	094	102	105	079	080	070	059	053	034	025	010	006	001											849
120-129	037	060	096	078	082	035	020	021	016	017	008	008	005	002												485
130-139	039	056	048	025	015	003		001					001													188
140-149	036	041	018	002																						97
150-159	024	019	006	001																						50
160-169	039	017	002																							58
170-179	030	015	001																							46
180-189	025	009																								34
190-199	030	007																								37
200-209	024	010																								34
210-219	034	010																								44
220-229	037	011																								48
230-239	033	010	003	002																						48
240-249	033	023	004	003																						63
250-259	040	033	016	001																						90
260-269	033	039	036	012	001																					121
270-279	027	061	050	050	016	012	003	002	001	003																225
280-289	024	040	082	094	087	060	049	031	021	016	003															507
290-299	015	038	051	073	094	088	094	052	023	034	004															566
300-309	011	022	016	028	019	009	007		001	002	001															116
310-319	010	014	003	001	003																					31
320-329	012	009	002																							23
330-339	008	005	002																							15
340-349	006	001	001																							8
350-359	003	003																								6
		774		564		331		199		136		40		9		0		0		0		0		0		4438
	748		651		486		236		135		60		18		1		0		0		0		0		0	

NUMBER OF ZERO RATES 23


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
□ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 100M 7000 166/73 46
SCALE
10 MILES
N
168
176
178
182
185
189
192
195
197
198
199
201
204
206
208
210
212

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W

STARTING TIME OF ANALYSED DATA 00 MIN 09 HR 15 DAY 06 MON 73 YR

LENGTH OF DATA 46 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.4	.0	135.2	180.0
Q1	3.6	.4	156.3	241.0
O1	14.2	-.8	156.6	258.3
NO1	1.7	-.3	154.7	329.4
K1	33.5	-.9	155.4	268.3
J1	2.1	-.1	160.0	323.0
OO1	1.1	-.2	152.4	286.3
MU2	2.7	.0	157.8	271.9
N2	11.3	-.6	160.8	231.9
M2	45.6	-1.0	160.4	249.7
L2	2.1	-.7	167.2	101.9
S2	9.0	2.0	146.7	266.9
MN4	1.9	-.7	142.0	343.1
M4	3.4	-.7	153.7	4.4
MS4	1.1	-.3	122.7	29.0
M6	1.5	-1.0	168.0	30.2
M8	.8	-.2	145.5	80.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 100 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

JUNE 16 1973

MAJOR COMPONENT	4	1	3	3	-1	-2	2	4	10	11
MINOR COMPONENT	0	-1	1	-1	-2	-1	-3	-4	-2	-3

JUNE 26 1973

MAJOR COMPONENT	7	1	-2	4	7	5	5	8	8	2
MINOR COMPONENT	-2	-5	-2	-4	-3	-5	-3	-1	-1	-3

JULY 6 1973

MAJOR COMPONENT	0	4	4	5	2	2	6	7	9	11
MINOR COMPONENT	-4	-2	-2	-2	-2	-1	-2	2	0	-2

JULY 16 1973

MAJOR COMPONENT	13	14	10	6	5	6	10	11	10	10
MINOR COMPONENT	-3	-3	-3	-4	-2	-1	-3	-1	-3	-2

JULY 26 1973

MAJOR COMPONENT	11	11	9	6	7
MINOR COMPONENT	-3	-5	-4	-3	-3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

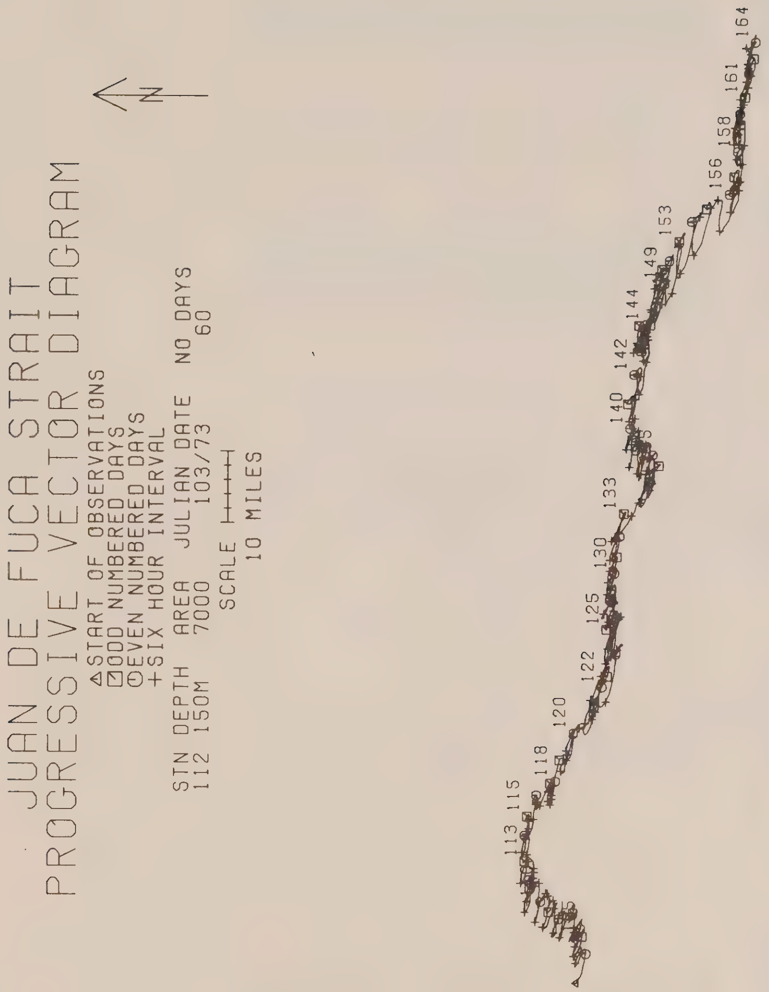
STN 112 DEPTH 150 JUAN DE FUCA ST. 48 21.2 N 124 2.8 W LENGTH OF RECORD= 61 DAYS

START OF RECORD 15 MN 19 HR 13 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	006	012	011	007	004																					40
10- 19	007	014	008	009	003	001																				42
20- 29	005	012	004	005	002	001																				29
30- 39	001	003	003	007	002	002																				18
40- 49	006	011	010	007	004	001	001																			40
50- 59	008	006	009	013	010	006		001																		53
60- 69	008	010	013	015	007	008	002	001																		64
70- 79	008	010	011	013	011	008	012	006	001	002	003		002													87
80- 89	008	019	017	017	020	021	009	019	017	012	015	012	019	014	005	007										231
90- 99	012	023	022	023	022	037	035	042	054	063	049	048	047	024	025	012	003	001		001						543
100-109	008	023	035	011	032	045	047	058	066	071	056	041	038	025	031	029	011	005	003	001	001					637
110-119	010	027	025	034	041	044	046	045	074	046	024	019	008	013	005	006		001								468
120-129	011	020	030	027	026	033	032	039	037	017	005	005	003	001	003	002	002									293
130-139	009	030	035	034	040	038	025	015	008	003					002											239
140-149	005	026	027	024	020	016	009	006	003																	136
150-159	007	019	017	012	004	006	003																			68
160-169	003	025	019	008	006	002	001																			64
170-179	003	012	017	010	004																					46
180-189	007	010	012	009	001	003	002	001																		45
190-199	005	014	012	001	004	002		002	001																	41
200-209	004	022	006	001		001																				34
210-219	004	016	006	007	001	001																				35
220-229	005	020	012	004	002	001																				44
230-239	002	018	010	003	003	002																				38
240-249	006	018	013	011	008	002	001																			59
250-259	003	026	029	017	014	008	003																			100
260-269	006	014	022	020	021	018	013	014	008	001	004	006														147
270-279	008	020	030	042	041	039	037	034	032	021	019	011	011	003	001	003	003									355
280-289	009	024	041	049	050	040	056	041	066	043	043	045	024	014	010	011	002									576
290-299	010	019	035	068	061	041	046	054	044	045	025	032	011	005	004	002	001									503
300-309	010	031	036	042	041	031	030	022	019	014	011	008	003	004	001											303
310-319	011	032	036	043	030	021	007	005	001		001															187
320-329	007	014	026	024	017	002																				90
330-339	008	022	021	019	013	002																				65
340-349	007	017	010	015	003	001																				53
350-359	004	012	009	009	004	001																				39
	241	651	679	660	572	493	417	405	431	338	255	227	166	103	87	72	22	7	3	2	1	0	0	0	0	5832

NUMBER OF ZERO RATES 7


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 150M 7000 103/73 60
SCALE
10 MILES
N
113
115
118
120
122
125
130
133
140
142
144
149
153
156
158
161
164

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 150 JUAN DE FUCA ST. 48 21.2 N 124 2.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 21 HR 13 DAY 04 MON 73 YR

LENGTH OF DATA 60 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	4.6	.0	169.6	180.0
Q1	2.4	.4	161.5	287.6
O1	8.1	-.6	3.9	55.7
NO1	2.6	.6	159.4	285.5
K1	23.9	.5	171.4	238.8
J1	2.1	.5	176.9	287.0
OO1	.9	.4	163.4	12.7
MU2	1.1	.2	171.8	151.2
N2	7.8	2.2	160.6	222.9
M2	36.9	5.1	162.2	227.4
L2	1.8	.4	1.2	223.8
S2	7.4	1.3	151.8	228.5
MN4	.6	-.1	71.0	139.9
M4	2.1	-.8	18.5	146.2
MS4	.8	.1	118.8	318.1
M6	1.4	.6	126.6	191.3
M8	.5	.1	47.1	141.3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 150 JUAN DE FUCA ST. 48 21.2 N 124 2.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 14 1973										
MAJOR COMPONENT	5	2	3	-3	1	2	3	2	5	7
MINOR COMPONENT	3	2	4	3	4	3	5	1	3	3
APR. 24 1973										
MAJOR COMPONENT	6	7	5	1	5	9	10	6	4	8
MINOR COMPONENT	2	0	-2	-1	1	-1	-2	0	0	1
MAY 4 1973										
MAJOR COMPONENT	6	3	1	5	3	5	4	5	7	12
MINOR COMPONENT	5	-1	1	3	1	1	1	2	2	-3
MAY 14 1973										
MAJOR COMPONENT	6	2	1	-1	3	3	7	9	7	8
MINOR COMPONENT	0	3	3	2	2	2	4	2	1	3
MAY 24 1973										
MAJOR COMPONENT	0	0	1	4	7	3	0	3	7	8
MINOR COMPONENT	1	-1	-1	1	1	1	2	-1	3	-2
JUNE 3 1973										
MAJOR COMPONENT	6	8	5	7	7	3	4	6	5	5
MINOR COMPONENT	-2	-4	1	2	3	1	1	2	[illegible]	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

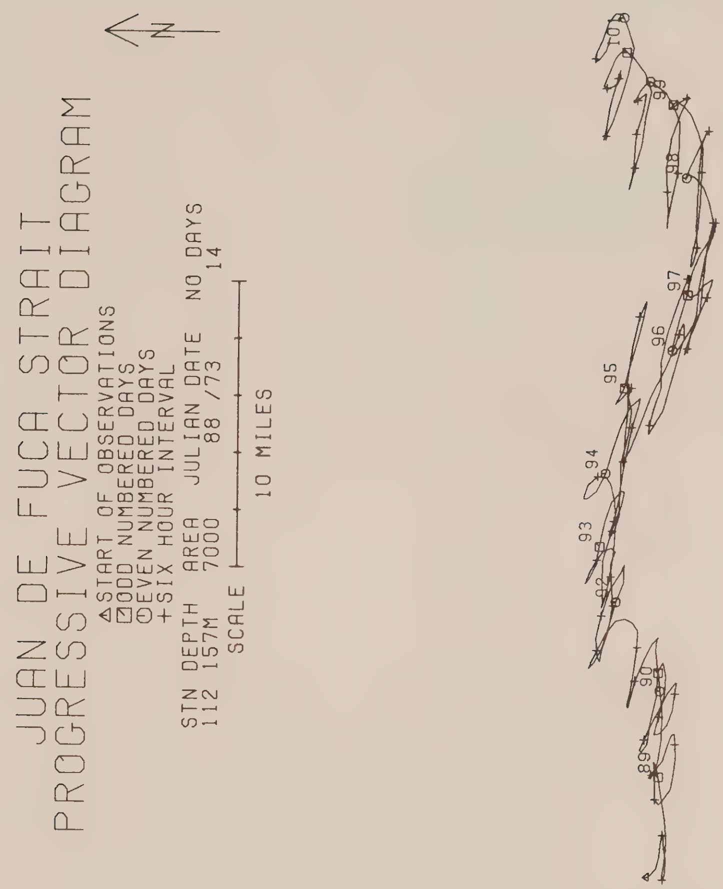
STN 112 DEPTH 157 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W LENGTH OF RECORD= 15 DAYS

START OF RECORD 00 MN 08 HR 29 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		002	002	001																						5
10- 19	002	004	009	001																						16
20- 29	001		006	004	002																					13
30- 39	001	002	001	003	001																					8
40- 49	003	001	003	005	004																					16
50- 59	004	001	003	005	006	003	005	003																		30
60- 69	005	006	007	003	007	016	011	003																		58
70- 79	001	003	001	003	004	007	011	008	002																	40
80- 89	001	012	011	009	008	009	013	015	015	015	002	004														114
90- 99	005	009	010	014	025	024	017	018	034	024	030	012	004	002	001											229
100-109	001	006	004	014	015	013	018	026	038	031	019	005	002													192
110-119	002	003	006	006	019	024	027	016	022	019	007	005	006		003											165
120-129		006	009	007	018	010	003	005	003	001	003	005	001	001	001											73
130-139	005	008	008	010	010	005	001																			47
140-149	002	006	010	005	003		001																			27
150-159	003	005	013	001	001																					23
160-169	003	003	002	001	001																					10
170-179	001	004	001	001																						7
180-189	006	007																								13
190-199	003	002																								5
200-209	006																									6
210-219	003	003																								6
220-229	002	002	002																							6
230-239		003	003	001																						7
240-249	007	002	003		001	003	001																			17
250-259	006	002	001	005	001	003	002	002		001																23
260-269	007	005	003	001	005	011	005	008	012	005	001	001														64
270-279	013	007	006	015	012	012	016	022	020	016	011	009	002	004												165
280-289	002	016	013	013	020	024	015	009	005	006	008	016	005	004	002											158
290-299	011	005	008	021	028	029	029	024	014	010	004	005	003	001												192
300-309	002	007	016	021	023	018	005	003	004	001																100
310-319	006	008	007	006	004																					31
320-329	005	006	007	006	007																					31
330-339	002	005	004		002	002																				15
340-349	005	004	009	004																						22
350-359	005	004	009	004	002																					24
	131	169	197	190	229	213	180	162	169	129	85	62	23	12	7	0	0	0	0	0	0	0	2	2	0	1958

NUMBER OF ZERO RATES 77


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
112 157M 7000 88 /73 14
SCALE
10 MILES
N
89
90
93
94
95
96
97
98
99

TIDAL CURRENT ELLIPSE

STN 112 DEPTH 157   JUAN DE FUCA ST.   48 21.3 N 124 4.1 W

STARTING TIME OF ANALYSED DATA   00 MIN 10 HR 29 DAY 03 MON 73 YR

LENGTH OF DATA   13 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	4.4	.0	4.3	.0
O1	9.1	.3	3.8	75.3
K1	16.9	.2	178.6	245.9
OO1	2.7	1.6	107.1	6.9
M2	35.2	3.9	164.8	226.5
S2	9.0	-.6	171.5	228.7
M4	1.7	-.2	124.1	233.8
MS4	2.3	-.7	100.7	61.7
M6	1.6	.8	144.1	190.5
M8	.9	.2	118.8	94.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 112 DEPTH 157 JUAN DE FUCA ST. 48 21.3 N 124 4.1 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 30 1973

MAJOR COMPONENT	6	1	3	4	5	7	5	5	8	5
MINOR COMPONENT	3	1	6	3	2	1	-2	1	4	3

APR. 9 1973

MAJOR COMPONENT	0	1	2
MINOR COMPONENT	2	3	1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

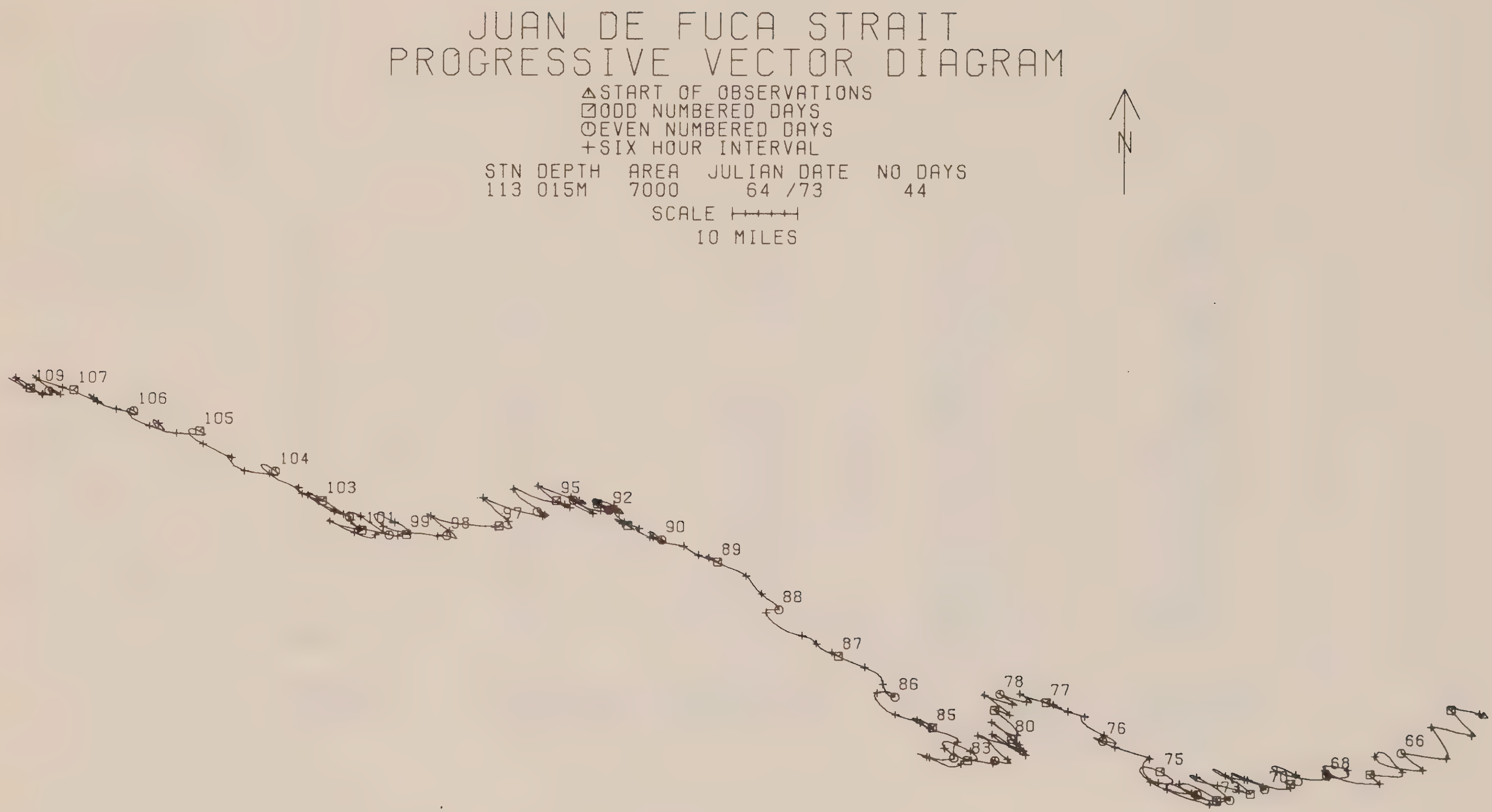
STN 113 DEPTH 015 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 45 DAYS

START OF RECORD 00 MN 17 HR 05 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		019	003	007	004	010	003	001	001	001																49
10- 19		021	007	004	004	001		003																		40
20- 29		009	002	006	007	005	001		002	001																33
30- 39		009	008	005	005	001		001																		29
40- 49		019	007	004	004	002	002		001																	39
50- 59		019	005	001	006	002	001			003																37
60- 69		032	007	008	002	006	001																			56
70- 79		028	007	003	007	006	003	001	001	001																57
80- 89		029	010	013	013	007	002	005	002	005	002															88
90- 99		036	027	018	019	030	015	012	005	012	015	012	002													203
100-109		026	021	022	010	030	018	022	017	020	012	018	005	006	001											228
110-119		023	014	025	017	035	030	031	034	023	022	028	027	028	017	007										361
120-129		042	027	030	031	052	051	069	059	034	053	070	046	027	020	016	007	003								637
130-139		042	019	021	027	034	019	032	025	023	023	044	030	021	020	007	002									389
140-149		027	015	009	014	016	011	010	008	006	003	002	002	009	010	002	001									145
150-159		029	013	007	011	004	009	004	002	002	001	002	001	003												88
160-169		025	005	008	005	006	003	003	001																	56
170-179		018	006	006	002	005	002	002																		41
180-189		013	003			001																				17
190-199		013	003	007	007																					30
200-209		011	003	006	003																					23
210-219		013	006	008	002	001																				30
220-229		011	005	011	002																					29
230-239		017	007	004	006	003																				37
240-249		014	009	007	003	002	001																			36
250-259		013	015	013	005	013	007	001	002	001																70
260-269		018	007	014	019	021	018	016	015	002	002	004	006		001	001	001		001		002					148
270-279		030	028	020	022	040	042	023	020	014	021	032	017	016	015	026	017	012	018	015	018	009	001	006		462
280-289		035	034	024	028	052	055	036	042	035	042	048	045	043	046	053	031	035	037	031	023	014	012	002		803
290-299		031	031	037	036	054	042	046	048	049	063	087	067	059	044	055	029	023	015	008	015	001				840
300-309		025	021	019	016	031	025	023	026	024	020	024	016	018	030	018	009	004	003							352
310-319		040	022	028	021	031	016	013	016	019	018	015	014	014	008	007	003	001								286
320-329		031	010	020	012	019	006	014	009	006	008	006	005	001	001											148
330-339		015	009	011	008	007	011	007	009	003	002	001	001	001												85
340-349		020	008	006	008	010	012	006	001	001	003	003	001													79
350-359		015	006	007	006	012	004	003	001	002	001															57
	0	818	430	439	392	519	410	384	347	287	311	396	285	246	213	192	100	78	74	54	58	24	13	8	0	6108

NUMBER OF ZERO RATES 326


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 015M 7000 64 /73 44
SCALE
10 MILES
N
109
107
106
105
104
103
101
99
98
97
95
92
90
89
88
87
86
85
83
80
78
77
76
75
70
68
66

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 015 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 19 HR 05 DAY 03 MON 73 YR

LENGTH OF DATA 44 DAYS 13 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	11.0	.0	167.4	.0
Q1	3.2	.0	150.9	201.3
O1	16.4	-.1	156.9	245.1
NO1	1.2	-.6	129.3	286.8
K1	21.9	-.3	156.4	252.0
J1	1.9	.3	11.0	94.5
OO1	1.3	.9	163.5	327.3
MU2	3.2	-1.9	87.1	152.2
N2	8.1	-.6	155.8	222.4
M2	46.0	-5.6	155.7	245.2
L2	.8	.6	28.0	349.1
S2	14.0	-.1	153.2	262.8
MN4	1.4	-.6	40.8	270.0
M4	2.8	-1.3	31.6	301.5
MS4	2.9	-1.5	23.8	323.6
M6	1.0	.1	41.5	266.5
M8	.7	-.3	104.1	293.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 015 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 6 1973

MAJOR COMPONENT	-6	-5	-13	-10	-8	-4	-6	-5	-7	-14
MINOR COMPONENT	-20	-10	-7	-7	-5	-3	-4	-2	-2	2

MAR. 16 1973

MAJOR COMPONENT	-20	-22	-14	1	10	1	-2	-8	-6	-11
MINOR COMPONENT	1	4	-4	-6	-7	-1	-7	-3	-2	5

MAR. 26 1973

MAJOR COMPONENT	-16	-22	-25	-25	-20	-12	-7	-5	-6	-5
MINOR COMPONENT	4	4	5	6	-1	-1	2	0	-3	-1

APR. 5 1973

MAJOR COMPONENT	-4	-8	-14	-13	-6	-10	-6	-10	-19	[illegible]
MINOR COMPONENT	-6	-9	-10	-5	-3	-3	2	1	2	1

APR. 15 1973

MAJOR COMPONENT	-22	-19	-8	-5
MINOR COMPONENT	-3	-2	-4	-2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

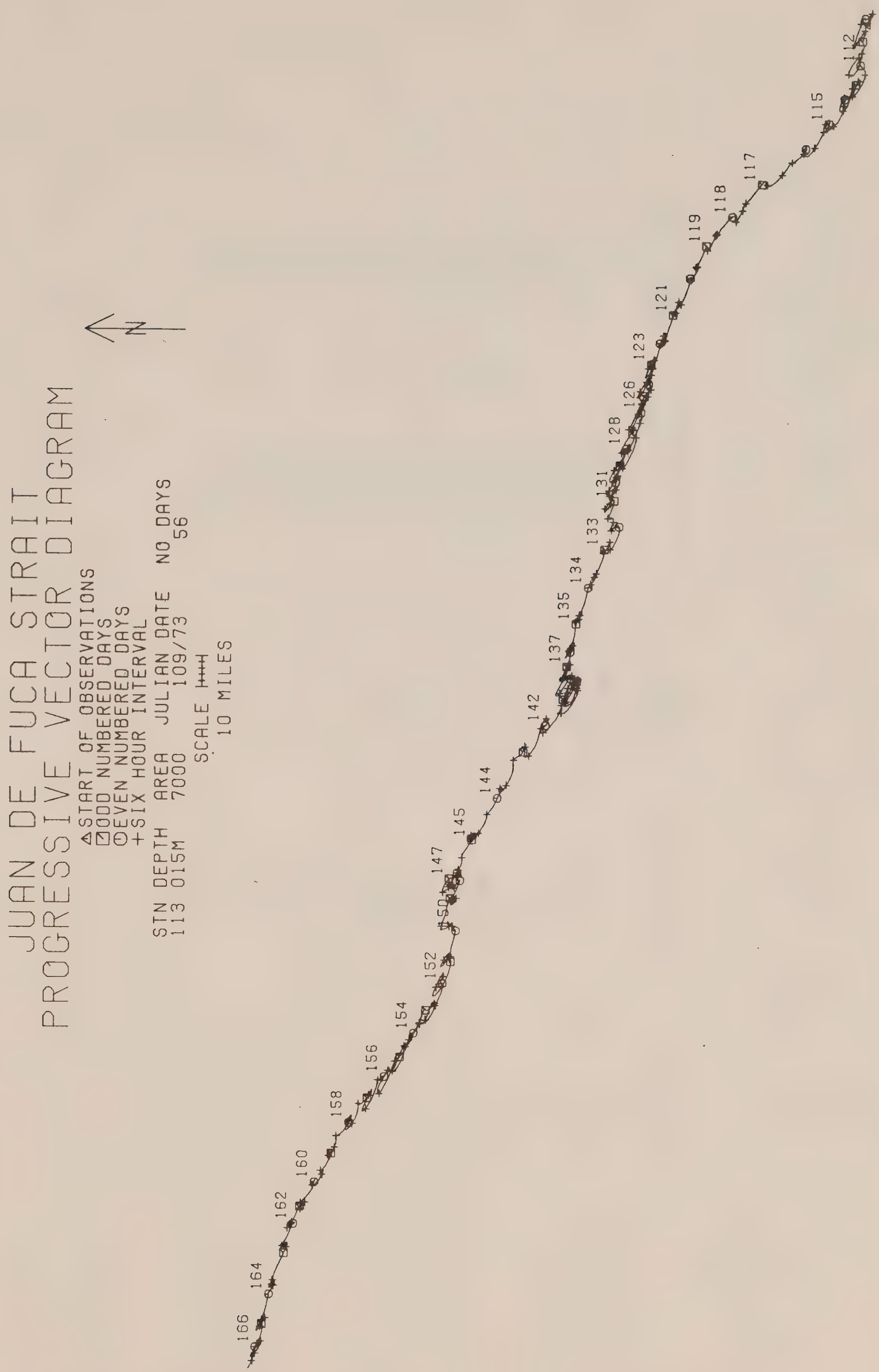
STN 113 DEPTH 015 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W LENGTH OF RECORD= 57 DAYS

START OF RECORD 15 MN 14 HR 19 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	009	013	004	004	005																					34
10- 19	018	016	009	005	001																					49
20- 29	012	018	013	004	001																					48
30- 39	003	008	003	001																						15
40- 49	013	012	008	002	001																					36
50- 59	009	011	011	004	001																					36
60- 69	005	021	022	002	001																					51
70- 79	013	021	013	011	002																					60
80- 89	007	027	022	007	007	003																				73
90- 99	008	021	022	014	012	004	004																			85
100-109	008	018	016	028	029	018	023	018	008		007	002	002													177
110-119	012	020	026	047	030	033	058	035	036	046	011	004	001													359
120-129	014	033	033	063	048	042	028	034	029	031	005	004														364
130-139	010	031	045	037	024	017	006	005	001																	176
140-149	008	039	036	023	017	003																				126
150-159	010	031	017	010	005	001																				74
160-169	013	027	011	003	002	001																				57
170-179	007	031	004																							42
180-189	015	031	002	004																						52
190-199	008	020	003																							31
200-209	016	027	003																							46
210-219	024	035	016																							75
220-229	017	025	013																							55
230-239	012	029	015	001																						57
240-249	015	031	013	002																						61
250-259	009	046	016	006	001																					78
260-269	014	048	044	019	009	003		001																		138
270-279	011	066	078	033	030	024	020	015	008	007	004	004														300
280-289	010	047	081	077	065	056	043	053	047	037	051	043	012	004	003											629
290-299	012	049	079	069	082	084	059	074	044	035	057	052	056	013	012											777
300-309	017	031	050	076	074	073	048	047	061	034	019	016	008	002		001										557
310-319	015	044	062	051	032	030	035	027	020	012	005	004														337
320-329	009	034	031	022	027	019	013	014	007	002																178
330-339	008	030	018	021	011	014	007	002	001																	112
340-349	004	021	012	013	005	002																				57
350-359	007	019	006	010	003	001																				46
		1031		669		[illegible]		325		204		129		19		1		0		0		0		0		5448
	401		857		525		344		262		159		79		15		0		0		0		0		0	

NUMBER OF ZERO RATES 0


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 015M 7000 109/73 56
SCALE
10 MILES
N
112
115
117
118
119
121
123
126
128
131
133
134
135
137
142
144
145
147
150
152
154
156
158
160
162
164
166

TIDAL CURRENT ELLIPSE

STN 113 DEPTH Ø15 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W

STARTING TIME OF ANALYSED DATA ØØ MIN 16 HR 19 DAY Ø4 MON 73 YR

LENGTH OF DATA 56 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	18.Ø	.Ø	155.5	.Ø
Q1	4.1	.1	179.3	218.4
O1	18.7	-1.8	152.Ø	239.5
NO1	3.4	-.3	147.7	231.6
K1	34.7	-1.3	157.3	238.Ø
J1	1.4	.7	148.8	31Ø.4
OO1	2.Ø	.9	75.6	215.4
MU2	5.3	-1.5	143.Ø	1Ø9.9
N2	13.6	-1.7	155.5	219.6
M2	5Ø.5	-7.2	152.Ø	223.Ø
L2	3.2	-.7	14Ø.8	34.6
S2	11.5	-1.Ø	163.2	237.3
MN4	1.Ø	-.1	49.9	21Ø.2
M4	2.6	-1.1	47.5	195.8
MS4	2.8	-1.4	4.6	242.8
M6	1.Ø	-.1	173.Ø	33.8
M8	.7	-.6	21.8	38.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 015 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 20 1973										
MAJOR COMPONENT	-15	-16	-13	-12	-20	-23	-34	-30	-27	-25
MINOR COMPONENT	-4	-5	-4	4	3	7	17	8	8	1
APR. 30 1973										
MAJOR COMPONENT	-28	-22	-16	-12	-9	-10	-15	-10	-12	-12
MINOR COMPONENT	0	0	-1	-4	-1	-2	-1	-1	-1	-2
MAY 10 1973										
MAJOR COMPONENT	-13	-15	-19	-29	-27	-19	-10	-6	0	-3
MINOR COMPONENT	-4	-10	2	-2	-3	-5	-2	-5	-5	0
MAY 20 1973										
MAJOR COMPONENT	-11	-22	-22	-35	-34	-26	-6	1	-14	-18
MINOR COMPONENT	3	3	6	2	3	-1	3	-6	0	-12
MAY 30 1973										
MAJOR COMPONENT	-21	-16	-21	-17	-18	-17	-17	-21	-25	-23
MINOR COMPONENT	-6	-1	1	1	1	4	4	5	2	2
JUNE 9 1973										
MAJOR COMPONENT	-20	-13	-21	-30	-21	-16				
MINOR COMPONENT	1	-1	-3	-3	-4	-3				

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

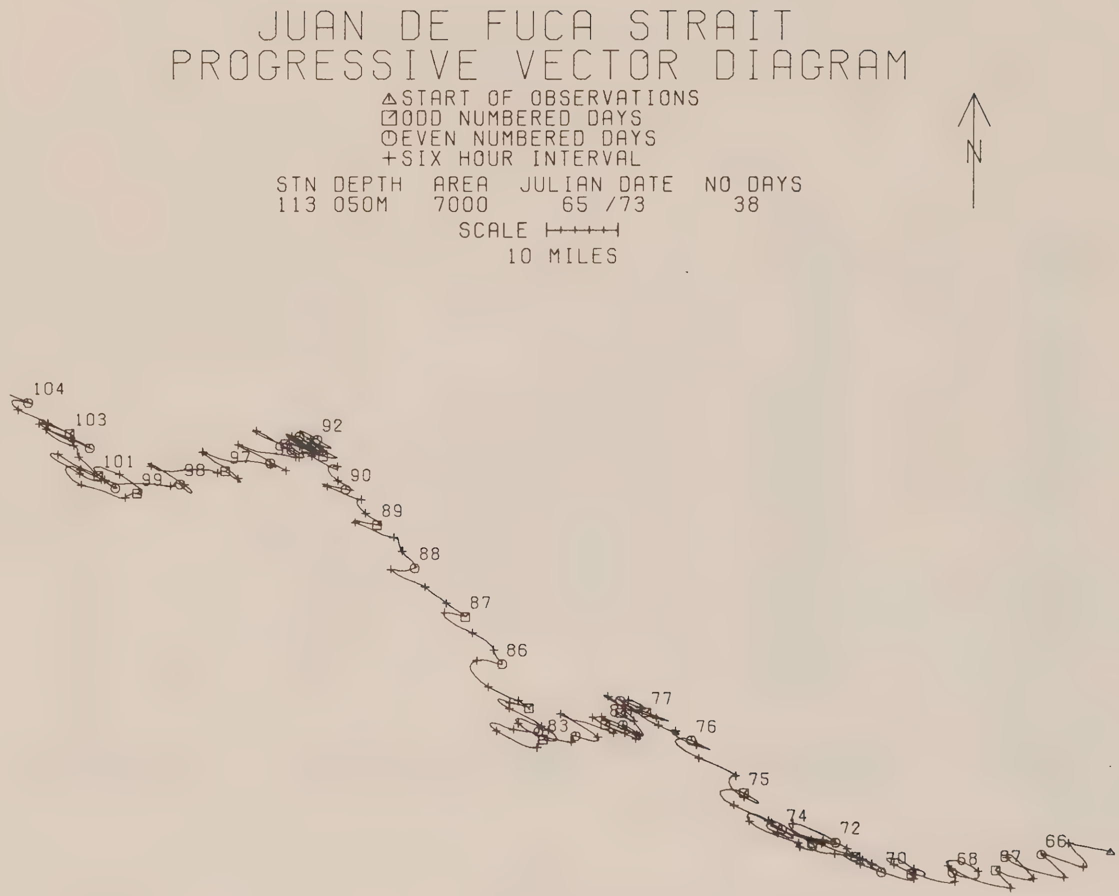
STN 113 DEPTH 050 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 39 DAYS

START OF RECORD 20 MN 07 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	008	009	010	008	008	001	005																			49
10- 19	003	006	007	005	002	001	003																			27
20- 29	001	009	009	004	004	001	001																			29
30- 39	002	006	008	008	002	001	003																			30
40- 49	006	006	010	013	006	003	002																			46
50- 59	005	003	006	011	005	004	004		001																	39
60- 69	006	005	004	009	007	006	003		002																	42
70- 79	003	013	011	007	009	013	002	009	006	002		001														76
80- 89	004	003	008	008	009	008	005	008	005	003	003		005													69
90- 99	003	008	020	018	024	017	014	025	018	013	013	006	005	001	001											186
100-109	005	013	008	008	023	015	035	021	037	041	026	019	022	022	009	001										305
110-119	003	010	014	009	026	028	018	034	035	030	037	050	055	066	029	022	012	013	004	001	001					497
120-129		005	011	007	018	019	022	024	027	030	029	037	025	038	034	019	012	016	006	002						381
130-139	001	006	007	014	026	013	014	016	012	015	022	022	016	018	017	003		004								226
140-149	004	005	009	018	010	005	007	010	009	005	006	001	006	006	004											105
150-159	004	006	012	017	008	008	012	007	004			001														73
160-169	002	009	008	014	007	003	004	002																		49
170-179	003	002	008	008	002	002	001																			26
180-189	003	006	011	007	007	001	001	001																		37
190-199		003	004	003	002		001	001																		14
200-209	004	008	006	010	002	004																				34
210-219	002	004	006	006	001	001																				20
220-229	001	005	018	008	004	002																				38
230-239	005	006	007	009	007																					34
240-249	003	008	012	010	007																					40
250-259	003	010	014	023	006	006														001	001			001		55
260-269	006	007	008	019	010	009	003	001						002	001				001	001	006	003	021			78
270-279	005	007	013	022	037	026	024	019	018	003	004	004	001	005	006	005	005	011	012	014	008	006		001		256
280-289	003	011	013	025	036	035	033	039	027	032	034	027	020	042	040	026	038	027	021	021	021	008	222			581
290-299	005	012	019	028	029	052	036	049	069	063	060	083	072	063	051	047	039	028	025	014	018	003	225			871
300-309	005	012	016	018	035	043	038	051	062	045	047	048	029	025	021	013	008	006	002	001						525
310-319	001	010	018	021	044	038	035	032	044	017	015	017	009	002						001						304
320-329	007	011	009	019	019	021	021	014	024	008	004															157
330-339	005	006	010	011	007	000	003	010	002		001															63
340-349	006	011	013	016	016	010	009	004	002																	87
350-359	001	008	010	011	011	002	002	004																		49
	128	269	377	452	476	406	361	381	404	307	301	316	265	290	213	136	114	105	71	56	55	20	3	2	0	5514

NUMBER OF ZERO RATES 96


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 050M 7000 65 /73 38
SCALE
10 MILES
N
104
103
101
99
98
97
92
90
89
88
87
86
83
77
76
75
74
72
70
68
67
66

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 050 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 09 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 38 DAYS 19 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.1	.0	157.5	.0
Q1	3.2	.9	133.3	201.3
O1	18.1	-.9	160.7	240.2
NO1	1.0	.3	148.0	304.1
K1	24.1	-1.1	158.2	248.5
J1	2.8	-.4	19.4	78.3
OO1	2.1	.4	22.2	146.4
MU2	3.4	-2.2	127.4	125.4
N2	9.2	-1.4	155.4	233.3
M2	50.0	-5.6	155.5	240.2
L2	1.4	.6	130.6	34.8
S2	16.2	-1.4	154.3	254.1
MN4	1.2	.3	75.2	272.1
M4	1.6	-.9	80.7	260.5
MS4	1.9	-.9	63.5	326.3
M6	.6	-.1	144.1	23.2
M8	.5	-.3	140.6	277.0

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 050 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973
MAJOR COMPONENT
-9 -11 -12 -9 -10 -8 -8 -10 -15 -21
MINOR COMPONENT
-10 -6 -5 -4 1 2 -3 0 5 7

MAR. 17 1973
MAJOR COMPONENT
-15 -8 2 7 -4 -6 -6 -3 -3 -13
MINOR COMPONENT
2 0 -4 -3 -2 -7 -5 1 5 9

MAR. 27 1973
MAJOR COMPONENT
-16 -21 -17 -14 -11 -4 -1 -3 -2 0
MINOR COMPONENT
8 6 7 6 6 5 -4 2 -4 -7

APR. 6 1973
MAJOR COMPONENT
-11 -10 -11 -7 -7 -7 -7 -15
MINOR COMPONENT
-8 -10 -7 -1 1 7 2 3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

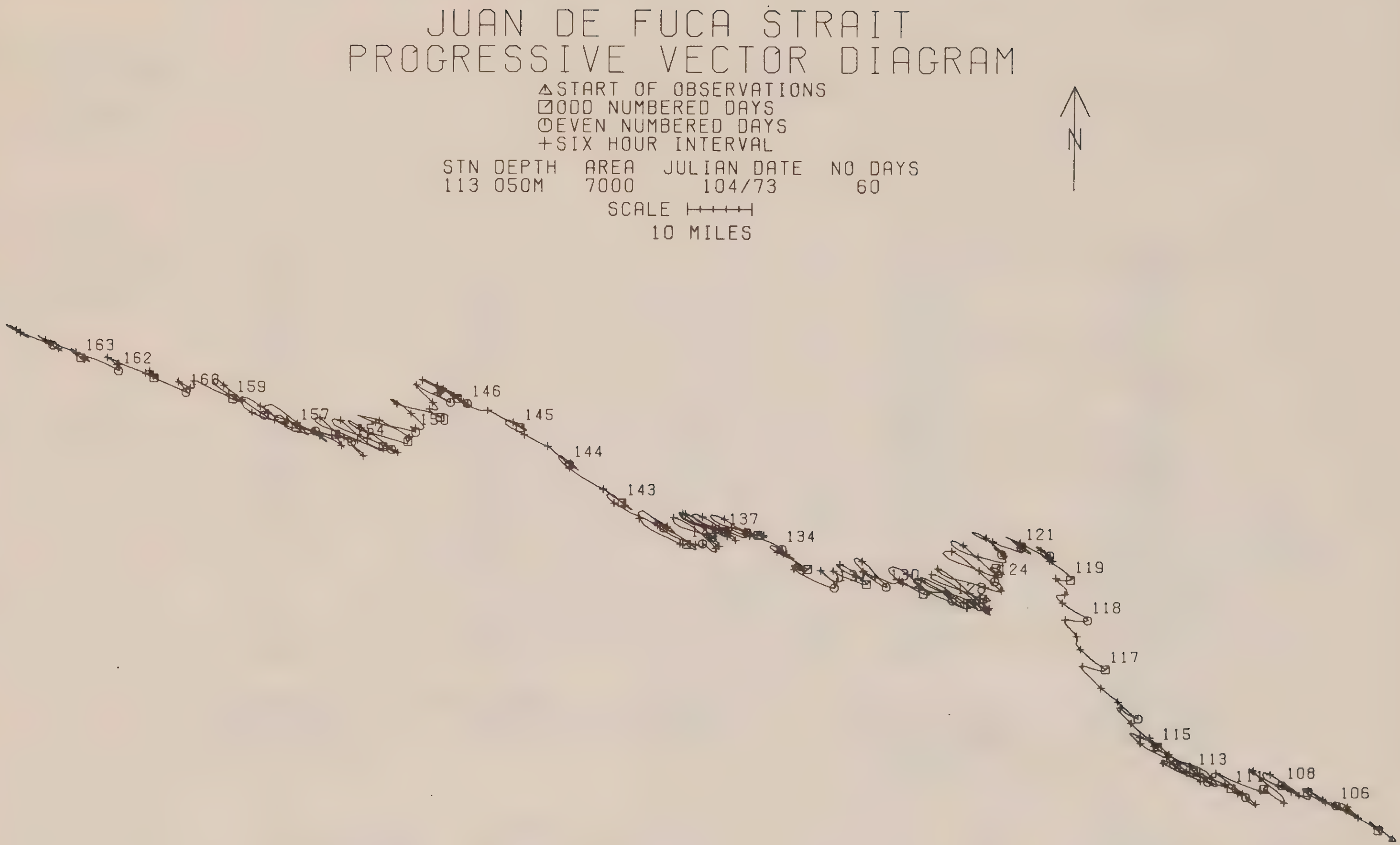
STN 113 DEPTH 050 JUAN DE FUCA ST. 48 19.4 N 124 5.8 W LENGTH OF RECORD= 61 DAYS

START OF RECORD 00 MN 15 HR 14 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	020	035	015	001	001																					72
10- 19	012	015	013		001																					41
20- 29	015	015	009	002																						41
30- 39	012	017	009	002	001																					41
40- 49	016	020	012	004	001																					53
50- 59	016	014	008	005																						43
60- 69	006	017	011	006																						40
70- 79	016	016	021	013	007	001																				74
80- 89	016	019	022	009	010	004	001																			81
90- 99	016	040	049	031	023	010	004	001	001																	175
100-109	017	047	050	054	049	037	022	003	001	004		002														286
110-119	017	039	074	082	078	051	066	036	026	024	015	005	002													515
120-129	028	045	048	061	108	068	089	068	046	022	011	007	010													611
130-139	026	050	090	072	103	086	090	057	055	029	021	026	011													716
140-149	019	035	043	046	028	015	014	014	008	002		001														225
150-159	032	064	045	033	010	004	001		001																	190
160-169	016	054	039	007	001																					117
170-179	012	022	017	005																						56
180-189	032	037	016	002																						87
190-199	015	013	009																							37
200-209	020	023	005	001																						49
210-219	020	018	003	001																						42
220-229	030	022	005																							57
230-239	012	022	004	001																						39
240-249	019	015	004																							38
250-259	024	035	012	004																						75
260-269	023	025	019	006	002						003															78
270-279	031	045	042	017	006	003	002		005	005	009															165
280-289	037	071	091	065	033	023	045	074	116	109	030	001														695
290-299	034	079	119	139	164	148	194	210	139	062	012															1300
300-309	039	093	161	157	257	177	131	064	011	002																1092
310-319	040	077	123	134	135	068	024	005	001																	607
320-329	031	077	090	043	041	009	004	002																		297
330-339	028	038	030	018	009	002	002																			127
340-349	035	046	024	018	009	002																				134
350-359	014	030	018	006	003																					71
	796	1330	1350	1045	1080	708	689	534	410	259	101	42	23	0	0	0	0	0	0	0	0	0	0	0	0	8367

NUMBER OF ZERO RATES 273


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 050M 7000 104/73 60
SCALE
10 MILES
N
163
162
160
159
157
146
145
144
143
137
134
121
119
118
117
115
113
108
106

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 050 JUAN DE FUCA ST. 48 19.4 N 124 5.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 17 HR 14 DAY 04 MON 73 YR

LENGTH OF DATA 59 DAYS 19 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	8.0	.0	160.1	.0
Q1	3.2	-.3	172.2	234.1
O1	17.6	.8	152.2	242.5
NO1	2.7	.3	171.3	266.0
K1	33.3	-.2	154.4	244.1
J1	2.7	.6	174.9	273.6
OO1	2.1	-.5	137.4	279.0
MU2	3.7	-1.6	153.6	130.1
N2	10.2	-1.7	147.7	230.3
M2	48.1	-5.7	148.4	241.3
L2	1.1	.6	129.2	44.3
S2	11.0	-2.3	165.2	252.4
MN4	2.1	-.1	99.1	293.2
M4	3.2	-.6	68.8	279.6
MS4	2.0	-.3	69.7	323.0
M6	.9	-.3	178.6	88.6
M8	.4	.1	160.3	11.3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 050 JUAN DE FUCA ST. 48 19.4 N 124 5.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 15 1973										
MAJOR COMPONENT	-16	-9	-8	-4	-4	-6	-8	-6	-6	-9
MINOR COMPONENT	1	1	-2	-4	-5	1	-1	1	-1	3
APR. 25 1973										
MAJOR COMPONENT	-10	-17	-13	-11	-10	-10	-5	1	2	0
MINOR COMPONENT	6	10	12	10	5	-1	-5	-6	-4	-7
MAY 5 1973										
MAJOR COMPONENT	1	-3	-5	-10	-13	-7	-9	-11	-11	-9
MINOR COMPONENT	-3	0	-2	-1	-3	-2	-5	1	2	1
MAY 15 1973										
MAJOR COMPONENT	-4	-6	0	-3	-1	-5	-8	-16	-21	-20
MINOR COMPONENT	-1	-4	0	-4	-3	-3	2	1	4	4
MAY 25 1973										
MAJOR COMPONENT	-20	-5	-2	-2	-5	-1	-3	-3	-9	-5
MINOR COMPONENT	0	0	-2	-6	-7	-4	-5	0	-4	0
JUNE 4 1973										
MAJOR COMPONENT	-6	-5	-11	-12	-16	-12	-12	-13	-11	
MINOR COMPONENT	-2	-2	-1	1	-5	0	-3	-2	0	

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 28 DAYS

START OF RECORD 20 MN 22 HR 17 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	002	004	003	003																						12
10- 19	005	003	009	004																						21
20- 29	002	002	003	003	001																					11
30- 39	004	007	006	005		001																				23
40- 49	008	009	009	001	004																					31
50- 59	005	006	005	010	005	001																				32
60- 69	009	008	006	012	010	004	003																			52
70- 79	002	013	016	015	013	010	003	004	002					001												79
80- 89	008	011	016	020	019	017	018	020	014	011	006	006	006	003		001				001						177
90- 99	007	007	010	012	012	016	008	009	007	019	016	009	010	015	004	006	005	003	002		002					179
100-109	007	007	016	017	013	026	018	021	021	020	017	018	025	055	030	021	030	011	003	006	010	004	001			397
110-119	003	005	015	018	013	028	016	019	026	019	035	048	033	053	029	030	032	030	028	014	014	005	002			515
120-129	006	006	007	011	022	016	020	016	018	009	015	018	014	017	015	016	012	014	003	005		001				261
130-139	005	008	009	014	011	004	003	002	006	006	003	003	002	002	001	003		001								83
140-149	007	002	005	009	009	002	001			001		001	001													38
150-159	004	004	007	008	005	003	001	001		001																34
160-169	001	005	012	004	002	001	001	001																		27
170-179	003	004	005	002	002	001																				17
180-189	007	006	009	005	005			001																		33
190-199		003	005	002		001																				11
200-209	002	008	010	001	001																					22
210-219	004	009	011	003	003																					30
220-229	006	005	011	006	003	004																				35
230-239	004	009	005	007	004	001		001																		31
240-249	005	017	012	011	007	004	008	001																		65
250-259	007	013	019	012	019	014	010	011	012	003	001	001	001	001		001	001									126
260-269	007	011	021	020	014	017	021	019	013	014	007	003	003	007	006	003										186
270-279	008	011	022	025	039	028	033	036	044	035	042	023	013	012	010	015	010	013	013	006	001					439
280-289	002	009	014	014	028	020	018	025	020	032	028	020	021	031	017	011	005	010	020	005	003					353
290-299	004	009	008	017	015	009	018	016	020	014	018	008	010	006	006	003		003	002							186
300-309	003	009	017	016	016	011	011	014	017	012	008	002	002			003	001									142
310-319	003	007	007	007	008	004	002	002	003	001																44
320-329	006	006	011	006	004	003																				36
330-339	003	004	006	003	002	001																				19
340-349	002	004	001	006																						13
350-359	008	003	002	002	001																					16
	169	254	350	331	310	247	213	219	223	197	196	160	141	203	118	113	96	85	71	37	30	10	3	0	0	3776

NUMBER OF ZERO RATES 178

JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM

△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⦶EVEN NUMBERED DAYS
+SIX HOUR INTERVAL

STN	DEPTH	AREA	JULIAN DATE	NO DAYS
113	100M	7000	76 /73	27

SCALE
10 MILES

N

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 00 HR 18 DAY 03 MON 73 YR

LENGTH OF DATA 27 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.7	.0	138.9	180.0
Q1	1.0	.2	156.0	256.7
O1	13.2	.5	154.0	235.6
NO1	1.6	.6	172.2	286.5
K1	23.8	-.7	154.3	239.0
J1	2.4	-.1	175.1	250.2
OO1	1.5	.8	106.9	354.2
N2	11.5	-3.0	176.3	240.6
M2	51.3	-3.8	166.8	246.9
S2	16.2	-1.2	165.6	259.5
MN4	1.9	-.9	103.4	348.0
M4	2.8	-.5	109.3	11.2
MS4	1.4	-.2	144.9	23.0
M6	1.1	-.4	148.4	35.9
M8	.5	-.2	133.6	341.7

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 18 1973

MAJOR COMPONENT									
8	0	-11	-13	-2	9	17	13	13	11
MINOR COMPONENT									
-2	-1	-8	-5	-4	-2	-1	2	3	0

MAR. 28 1973

MAJOR COMPONENT									
12	12	9	16	13	13	15	11	5	2
MINOR COMPONENT									
-1	-1	-3	-5	-1	-5	-6	-3	-2	-5

APR. 7 1973

MAJOR COMPONENT						
3	3	5	2	5	2	5
MINOR COMPONENT						
-5	-3	1	3	2	0	0

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

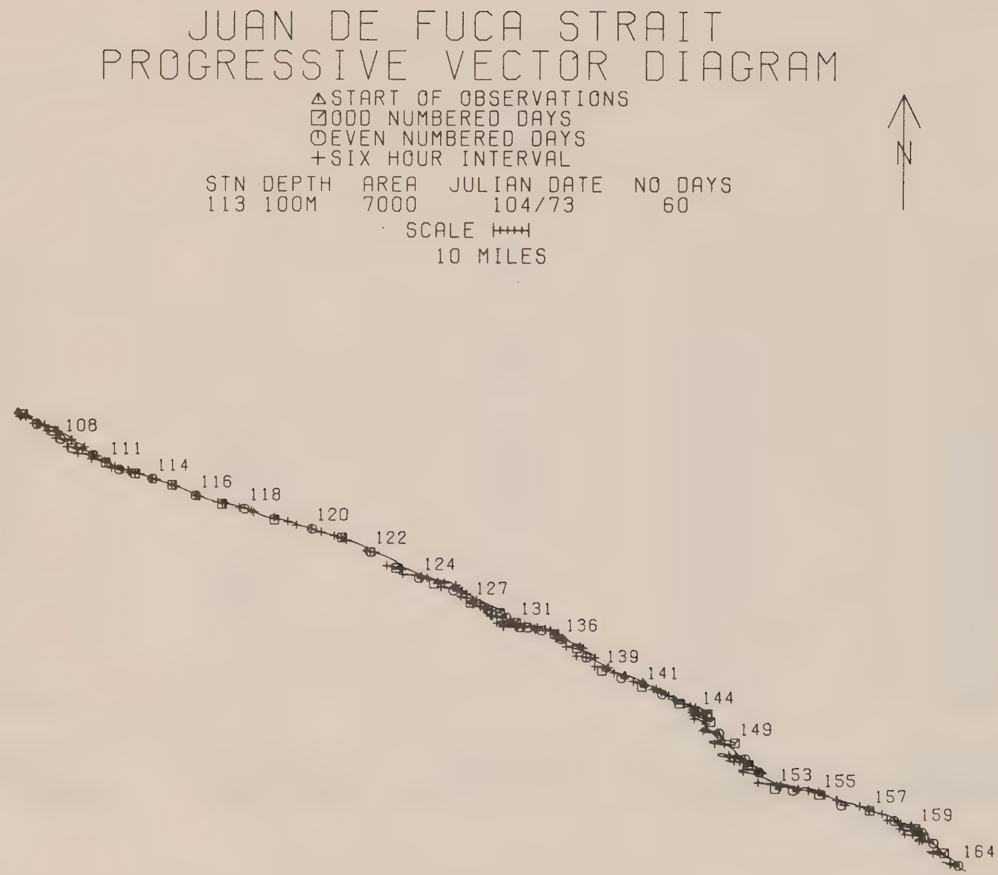
STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 61 DAYS

START OF RECORD 30 MN 14 HR 14 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 015	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	009	003	003																							15
10- 19	020	006	001																							27
20- 29	016	002	001																							19
30- 39	015	011	001																							27
40- 49	020	012	004																							36
50- 59	025	021	009	002																						57
60- 69	031	029	022	009	003	001																				95
70- 79	026	040	041	026	008	003							001													145
80- 89	065	073	108	105	095	032	015	005	001			008	014													521
90- 99	063	065	076	085	103	067	061	030	029	018	009	027	006													639
100-109	052	041	064	085	129	124	135	166	107	107	061	036	007													1114
110-119	027	041	058	061	069	088	082	082	083	105	053	020	011	001												781
120-129	036	033	046	050	060	053	045	028	019	014	006	002	001													393
130-139	031	025	033	033	027	010	010	002	001																	172
140-149	016	024	024	010	007	004	001																			86
150-159	017	015	017	005	005																					59
160-169	014	012	017	007																						50
170-179	010	012	008	002																						32
180-189	024	021	012	003																						60
190-199	014	016	011	002																						43
200-209	009	016	008																							33
210-219	022	024	012																							58
220-229	020	023	015	001																						59
230-239	018	035	019																							72
240-249	034	049	043	008	002																					136
250-259	057	063	071	034	015	003																				243
260-269	040	054	067	064	035	020	012	003																		295
270-279	067	071	127	138	175	138	139	053	042	004																954
280-289	054	065	124	132	163	137	086	018	014																	793
290-299	044	052	103	068	050	021	015	006																		359
300-309	051	052	067	027	012	003	002																			214
310-319	020	029	013	008																						70
320-329	027	022	009	004																						62
330-339	017	010	002																							29
340-349	019	007	001																							27
350-359	015	012	002																							29
	1045	1086	1239	969	958	704	603	393	296	248	129	93	40	1	0	0	0	0	0	0	0	0	0	0	0	7804

NUMBER OF ZERO RATES 843


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 100M 7000 104/73 60
SCALE
10 MILES
N
108
111
114
116
118
120
122
124
127
131
136
139
141
144
149
153
155
157
159
164

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 14 DAY 04 MON 73 YR

LENGTH OF DATA 59 DAYS 21 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	10.5	.0	154.4	180.0
Q1	2.2	.3	153.7	259.6
O1	12.1	-.1	154.2	236.0
NO1	2.2	-.1	150.5	279.6
K1	30.2	-.9	158.2	239.6
J1	3.2	-.4	168.0	280.5
OO1	1.3	-.1	93.5	281.0
MU2	2.3	.4	174.3	165.2
N2	12.8	-2.0	173.0	236.2
M2	48.3	-4.3	170.4	256.9
L2	1.9	-.9	155.4	79.8
S2	10.6	-1.1	170.3	260.5
MN4	.6	-.5	66.1	71.7
M4	2.3	-1.9	136.8	5.7
MS4	.7	-.4	115.9	32.2
M6	.9	.1	40.1	165.2
M8	.4	.0	156.8	12.0


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
N
STN DEPTH AREA JULIAN DATE NO DAYS
113 100M 7000 104/73 60
SCALE
10 MILES
108
111
114
116
118
120
122
124
127
131
136
139
141
144
149
153
155
157
159
164

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 14 DAY 04 MON 73 YR

LENGTH OF DATA 59 DAYS 21 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	10.5	.0	154.4	180.0
Q1	2.2	.3	153.7	259.6
O1	12.1	-.1	154.2	236.0
NO1	2.2	-.1	150.5	279.6
K1	30.2	-.9	158.2	239.6
J1	3.2	-.4	168.0	280.5
OO1	1.3	-.1	93.5	281.0
MU2	2.3	.4	174.3	165.2
N2	12.8	-2.0	173.0	236.2
M2	48.3	-4.3	170.4	256.9
L2	1.9	-.9	155.4	79.8
S2	10.6	-1.1	170.3	260.5
MN4	.6	-.5	66.1	71.7
M4	2.3	-1.9	136.8	5.7
MS4	.7	-.4	115.9	32.2
M6	.9	.1	40.1	165.2
M8	.4	.0	156.8	12.0

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 15 1973									
MAJOR COMPONENT									
10	12	7	9	13	9	9	9	11	12
MINOR COMPONENT									
-2	1	-2	-2	1	-1	0	2	1	2
APR. 25 1973									
MAJOR COMPONENT									
15	16	13	19	23	19	19	19	15	11
MINOR COMPONENT									
0	2	3	2	4	3	0	-3	1	1
MAY 5 1973									
MAJOR COMPONENT									
13	13	11	6	4	5	3	4	9	8
MINOR COMPONENT									
1	-2	1	2	-1	-1	-2	2	2	1
MAY 15 1973									
MAJOR COMPONENT									
6	12	8	12	13	14	13	11	12	6
MINOR COMPONENT									
-1	-1	-2	-3	1	1	1	-1	0	2
MAY 25 1973									
MAJOR COMPONENT									
-1	3	7	10	10	3	9	14	11	16
MINOR COMPONENT									
-2	-2	-4	-1	-6	-3	-1	-4	3	5
JUNE 4 1973									
MAJOR COMPONENT									
16	17	16	13	4	1	6	8	11	
MINOR COMPONENT									
1	4	1	1	0	-2	-1	-3	-3	

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W LENGTH OF RECORD= 59 DAYS

START OF RECORD 15 MN 14 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	011	008	002																							21
10- 19	025	025	005																							55
20- 29	006	006	004																							16
30- 39	014	018	007																							39
40- 49	022	021	006	002																						51
50- 59	024	028	020	002																						74
60- 69	012	031	028	008	004																					83
70- 79	015	036	047	025	012	003	001																			139
80- 89	014	038	049	074	044	022	006	002																		249
90- 99	016	044	063	056	068	062	037	037	022	014	007	008	002	001												437
100-109	011	032	066	052	071	073	073	073	069	053	039	021	022	004	001											660
110-119	011	030	041	047	053	049	040	060	053	063	028	023	017	016	003											534
120-129	007	024	031	031	032	034	029	025	015	007	003	002	003	001												244
130-139	013	027	020	017	019	012	009	002																		119
140-149	024	024	019	016	011	003	001																			98
150-159	016	010	019	007	001																					53
160-169	010	018	017	002	002																					49
170-179	015	014	013	001	001																					44
180-189	014	014	008	001																						37
190-199	018	017	009	001																						45
200-209	009	014	005																							28
210-219	014	018	010																							42
220-229	025	026	016																							67
230-239	022	033	027																							82
240-249	028	033	024	010	002																					97
250-259	021	069	049	023	010	001																				173
260-269	023	075	101	052	025	010	003	004	001																	294
270-279	023	062	132	094	081	075	074	031	009	004																585
280-289	023	067	105	108	110	117	069	045	017	013	004	001														679
290-299	017	055	077	044	030	016	011	008		005																263
300-309	017	045	019	011	006	003	002	001																		104
310-319	014	022	012	002																						50
320-329	015	027	004	002																						48
330-339	014	011																								25
340-349	013	014	004																							31
350-359	011	011	003																							25
	587	1047	1062	688	582	480	355	288	186	159	81	55	44	22	4	0	0	0	0	0	0	0	0	0	0	5640

NUMBER OF ZERO RATES 0


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 100M 7000 107/73 58
SCALE
10 MILES
N
111
115
118
120
122
124
127
132
138
141
144
150
154
156
158
163
166

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 100 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 58 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.4	.0	150.7	180.0
Q1	2.9	.5	146.8	260.3
O1	11.9	-.2	150.1	236.4
NO1	2.4	-.3	149.5	274.4
K1	32.7	-.3	154.9	240.3
J1	3.5	-.1	167.0	281.4
OO1	.9	.0	62.1	306.8
MU2	2.5	-.7	179.8	169.1
N2	13.0	-2.2	166.3	239.1
M2	50.6	-4.8	170.8	258.0
L2	2.4	-1.4	169.8	81.4
S2	11.0	-1.2	163.6	264.0
MN4	.6	-.2	30.2	127.3
M4	2.3	-1.9	109.3	45.5
MS4	.9	-.3	122.9	59.7
M6	.4	-.4	61.2	118.8
M8	.6	-.5	168.0	76.6

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 100 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973									
MAJOR COMPONENT									
9	9	6	8	7	8	9	10	12	14
MINOR COMPONENT									
-1	-1	0	-1	0	2	3	3	1	1
APR. 28 1973									
MAJOR COMPONENT									
16	26	20	18	16	17	13	14	11	12
MINOR COMPONENT									
-1	3	1	-1	-4	-1	0	-3	-2	1
MAY 8 1973									
MAJOR COMPONENT									
5	4	2	3	2	6	7	4	8	8
MINOR COMPONENT									
0	-1	0	-1	1	2	2	-3	-2	-2
MAY 18 1973									
MAJOR COMPONENT									
7	10	13	12	10	12	5	-3	2	6
MINOR COMPONENT									
-1	-1	0	1	-1	-1	0	-1	-4	-3
MAY 28 1973									
MAJOR COMPONENT									
10	7	0	10	13	13	17	17	17	13
MINOR COMPONENT									
-2	-3	-2	-1	-3	1	1	1	1	0
JUNE 7 1973									
MAJOR COMPONENT									
12	2	3	5	5	8	10	9		
MINOR COMPONENT									
2	0	-1	0	-3	-2	-4	-2		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

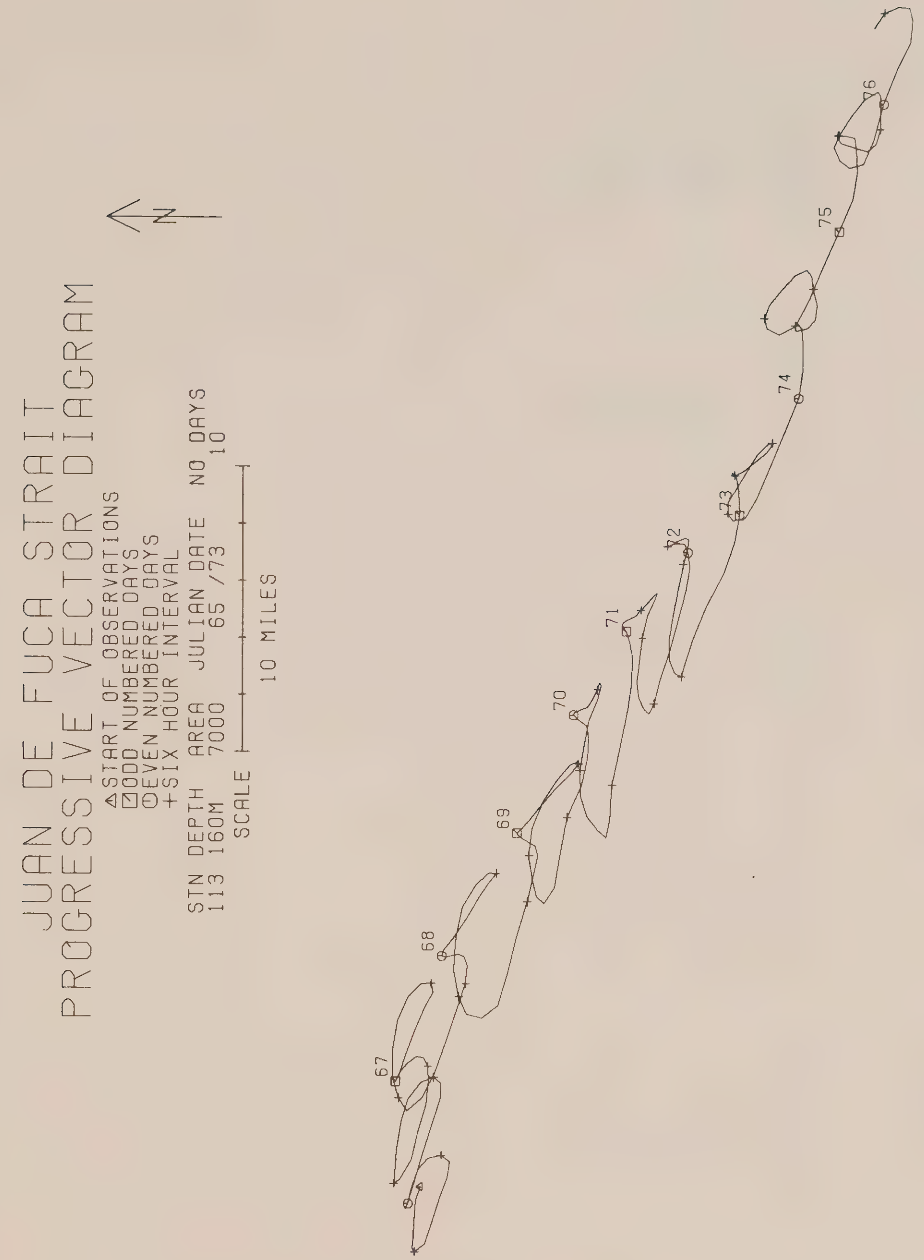
STN 113 DEPTH 160 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 11 DAYS

START OF RECORD 20 MN 08 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	002	002	002	002	005																					13
10- 19	001	004	004	004	001																					14
20- 29	004	006	006	011	003	002																				32
30- 39	003	002	004	007	001																					17
40- 49	002	003	006	007	002																					20
50- 59	004	001	006	007	002																					20
60- 69	003	002	001	010	002		002																			20
70- 79	004	002	001	006	004	006	004	001																		28
80- 89	003	001	005	005	018	015	013	006	002	002	001															71
90- 99	002	006	004		007	014	014	013	018	022	012	011	004	003	006	004										140
100-109	001	004	003	004	002	006	010	007	011	024	023	027	012	014	008	004										160
110-119	003	005	003	009	006	003	005	008	008	011	012	022	020	019	007	001										142
120-129	004	007	010	011	012	010	006	009	014	010	003	001	002	001	001	001										102
130-139	001	006	004	008	007	009	002	005	003	002																47
140-149	001	008	009	011	007	004	007	004																		51
150-159	001	004	004	007	002		004	001																		23
160-169	001	006	004	006		003																				20
170-179	002	005	001	005	004	002	001																			20
180-189		004	003	001	003	002	001	001																		15
190-199	005	001		003	001	004																				14
200-209	003	006	002	002	005	003		001																		22
210-219			002	001	003	004																				10
220-229	002	001	004	002	006	005																				20
230-239	003	002	001	003	008	005	003																			25
240-249				001	002		005	003																		11
250-259	001	003		001	011	006	004	004	005	004	001															40
260-269		001	002	005	003	001	004	002	006	006	003															33
270-279	002	002	004	008	007	003	004	013	010	015	011	006	002													87
280-289		003	005	006	007	005	003	011	020	013	009	008														90
290-299	003	003	002	004	003	005	010	007	006	004	004															51
300-309	002	004	001	002	006	009	005	018	015	008	001															71
310-319				004	003	003	010	009	003																	32
320-329	001	001	001	001	003	006	005	001																		19
330-339		002	001	001	005	007	003																			19
340-349	004	003	006	004	007	004	001																			29
350-359	002	004	004	006	005	001																				22
	70	114	115	175	173	147	126	124	121	121	80	75	40	37	22	10	0	0	0	0	0	0	0	0	0	1550

NUMBER OF ZERO PATES 33


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 160M 7000 65 /73 10
SCALE
10 MILES
N
67
68
69
70
71
72
73
74
75
76

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 160 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 10 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 10 DAYS 19 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	8.7	.0	157.7	180.0
K1	21.8	.5	171.8	259.8
M2	34.0	9.4	157.9	235.4
M4	1.9	-1.4	83.0	354.9
M6	2.0	.0	15.5	108.3
M8	.9	.3	57.0	61.2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 160 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT	8	10	11	10	7	7	3	9	12	10
MINOR COMPONENT	5	1	-1	0	-1	-2	-2	0	3	1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 113 DEPTH 170 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W LENGTH OF RECORD= 8 DAYS

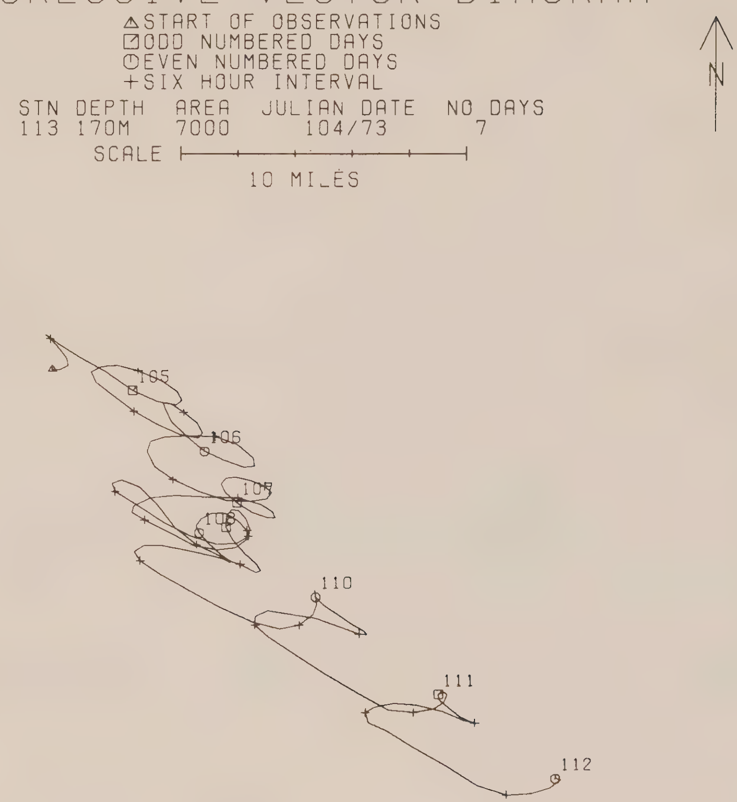
START OF RECORD 30 MN 14 HR 14 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		002	005																							7
10- 19	002	002	007	004																						15
20- 29	003	002	003	006	003	001																				18
30- 39			006	003	003																					12
40- 49	001		002	003	003		001																			10
50- 59				002		002	001																			5
60- 69		002		002	005	005	006	001																		21
70- 79			001	002	003	002	004	004	002																	18
80- 89	001		002	002	002		008	004	004	004																27
90- 99		001	001	001	003	005	003	006	014	007	001															42
100-109	001	001	002	001	001	002	004	004	009	005	006	006	003													45
110-119	001		001	005	003	005	006	003	016	015	014	004	007	014												94
120-129			003	003	014	012	022	010	012	012	015	012	012	014	003	001										145
130-139			001	003	009	011	008	005	005		002															44
140-149			003	009	006	004	009	001																		32
150-159		001	004	004	003	002	003																			17
160-169	001	002	004	006	008	001																				22
170-179	002	002	004	003	003																					14
180-189	001	001	006	003	001																					12
190-199			002	007																						9
200-209		001	006	003	002																					12
210-219		002	001	003	001																					7
220-229		001	004	005	003																					13
230-239		003	001	012	005	001	001																			23
240-249		001			003			002																		6
250-259		001	005	003	003	014	002	006	003																	37
260-269	001	001	002	002	001	005	001	002	003	002	001															21
270-279	002	002	005	002	001	002	008	008	008	010	006	004	003													61
280-289		004	004	003	007	013	002	003	008	021	009															74
290-299	001	003		002	002	005	006	004	018	007	001															49
300-309		001	001	006	005	016	008	005	003	002	001															48
310-319	001		001	004	011	006	004	001	001	004	004	001														38
320-329					006		001			001	002															10
330-339			002	007	005	001																				15
340-349	001	001	003	007	004																					16
350-359		003	008	004	001																					16
	19	40	100	132	130	115	108	69	106	90	62	27	25	28	3	1	0	0	0	0	0	0	0	0	0	1055

NUMBER OF ZERO RATES 21

JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM



TIDAL CURRENT ELLIPSE

STN 113 DEPTH 170 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 14 DAY 04 MON 73 YR

LENGTH OF DATA 7 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.2	.0	136.1	180.0
K1	20.3	2.3	173.3	221.1
M2	39.0	11.1	151.8	244.0
M4	1.8	-.6	81.8	342.7
M6	1.5	-.2	59.8	71.0
M8	.5	-.2	111.8	304.5

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 170 JUAN DE FUCA ST. 48 19.2 N 124 5.4 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 15 1973

MAJOR COMPONENT	8	4	-1	2	8	12	11
MINOR COMPONENT	-2	-3	-3	2	-2	-3	-2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

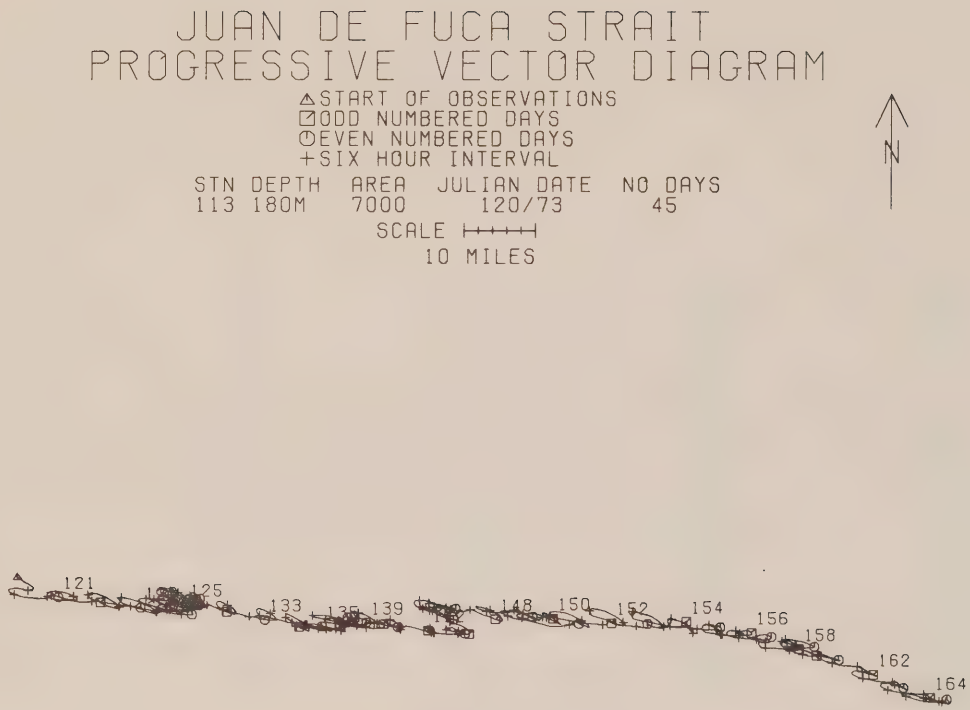
STN 113 DEPTH 180 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W LENGTH OF RECORD= 46 DAYS

START OF RECORD 45 MN 23 HR 30 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	012	023	011	003																					52
10- 19	004	008	022	010	002																					46
20- 29	004	011	016	010																						41
30- 39		008	010	006																						24
40- 49	004	013	013	007	003	001																				41
50- 59	003	013	012	013	004	001																				46
60- 69	006	008	033	023	005	005	003		001	001																85
70- 79	003	004	030	020	007	003	002	006	004	001				001												81
80- 89	004	006	025	019	027	015	011	018	016	016	014	015	005	004	005	003										203
90- 99	001	012	030	025	021	039	029	028	035	040	045	064	044	025	014	003										455
100-109		016	020	019	038	060	059	054	040	050	049	032	024	028	012	007										508
110-119	005	012	022	032	045	049	049	033	026	026	012	010	003	004	004	006										338
120-129	006	015	029	036	051	049	028	009	006	004	004	002														239
130-139	011	016	021	032	028	012	009	006		002																137
140-149	003	012	023	013	013	013	004	001																		82
150-159	005	010	022	007	010	007	001																			62
160-169	005	015	012	008	002	004	003																			49
170-179	005	007	009	007	006	002	001	001																		38
180-189	004	008	006	005	005	003	001																			32
190-199	003	007	012	007	005	002																				36
200-209	005	010	012	012	004	001	001																			45
210-219		009	018	007	009	002																				45
220-229	004	009	022	011	008	005																				59
230-239	001	013	010	012	011	004																				51
240-249		009	013	013	009	011	003	002																		60
250-259	003	014	014	019	016	011	001	002	001	001	001															83
260-269	001	009	016	019	025	016	012	007	006	004	003															118
270-279		006	021	012	024	018	025	021	015	019	012	005	003		001											182
280-289	002	007	021	018	021	030	025	048	046	035	029	018	013	003	001											317
290-299	003	006	010	023	027	038	059	048	026	019	020	016	014	002												311
300-309	001	009	015	020	016	019	024	021	016	012	010	002	002													167
310-319	001	003	009	017	009	018	012	007	005	005	001															87
320-329	003	006	010	010	015	017	005	004																		70
330-339	001	002	011	016	012	006	001																			49
340-349		003	022	014	005	002																				46
350-359	002	013	033	010	002																					60
	106	341	647	543	488	463	368	316	243	235	200	164	108	67	37	19	0	0	0	0	0	0	0	0	0	4345

NUMBER OF ZERO RATES 8


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
113 180M 7000 120/73 45
SCALE
10 MILES
N
121
125
133
139
148
150
152
154
156
158
162
164

TIDAL CURRENT ELLIPSE

STN 113 DEPTH 180 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 01 HR 01 DAY 05 MON 73 YR

LENGTH OF DATA 45 DAYS 5 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	5.8	.0	161.7	180.0
Q1	1.5	.5	128.0	263.8
O1	8.9	.5	177.4	254.0
NO1	.7	.0	34.0	101.7
K1	25.7	1.9	172.7	256.0
J1	1.7	1.3	172.8	317.1
OO1	.8	-.1	29.8	157.7
MU2	2.3	.7	11.0	5.5
N2	6.6	2.1	157.2	236.7
M2	30.1	6.9	162.9	248.2
L2	1.3	.0	163.1	76.0
S2	4.8	2.2	150.4	244.1
MN4	.6	.1	40.1	117.4
M4	1.2	-.1	23.6	145.4
MS4	.8	.7	170.9	310.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 113 DEPTH 180 JUAN DE FUCA ST. 48 19.3 N 124 5.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAY 1 1973

MAJOR COMPONENT									
13	12	12	8	4	3	0	0	0	-4
MINOR COMPONENT									
0	4	4	4	3	2	2	-2	-4	2

MAY 11 1973

MAJOR COMPONENT									
4	9	11	10	6	5	1	2	4	5
MINOR COMPONENT									
1	2	3	2	3	2	4	1	0	2

MAY 21 1973

MAJOR COMPONENT									
4	9	10	1	-7	-4	5	11	10	6
MINOR COMPONENT									
1	3	4	1	5	-2	-1	5	5	2

MAY 31 1973

MAJOR COMPONENT									
8	9	10	10	10	9	6	9	4	2
MINOR COMPONENT									
2	4	4	6	3	2	1	0	3	-2

JUNE 10 1973

MAJOR COMPONENT				
7	11	10	9	5
MINOR COMPONENT				
2	1	0	1	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

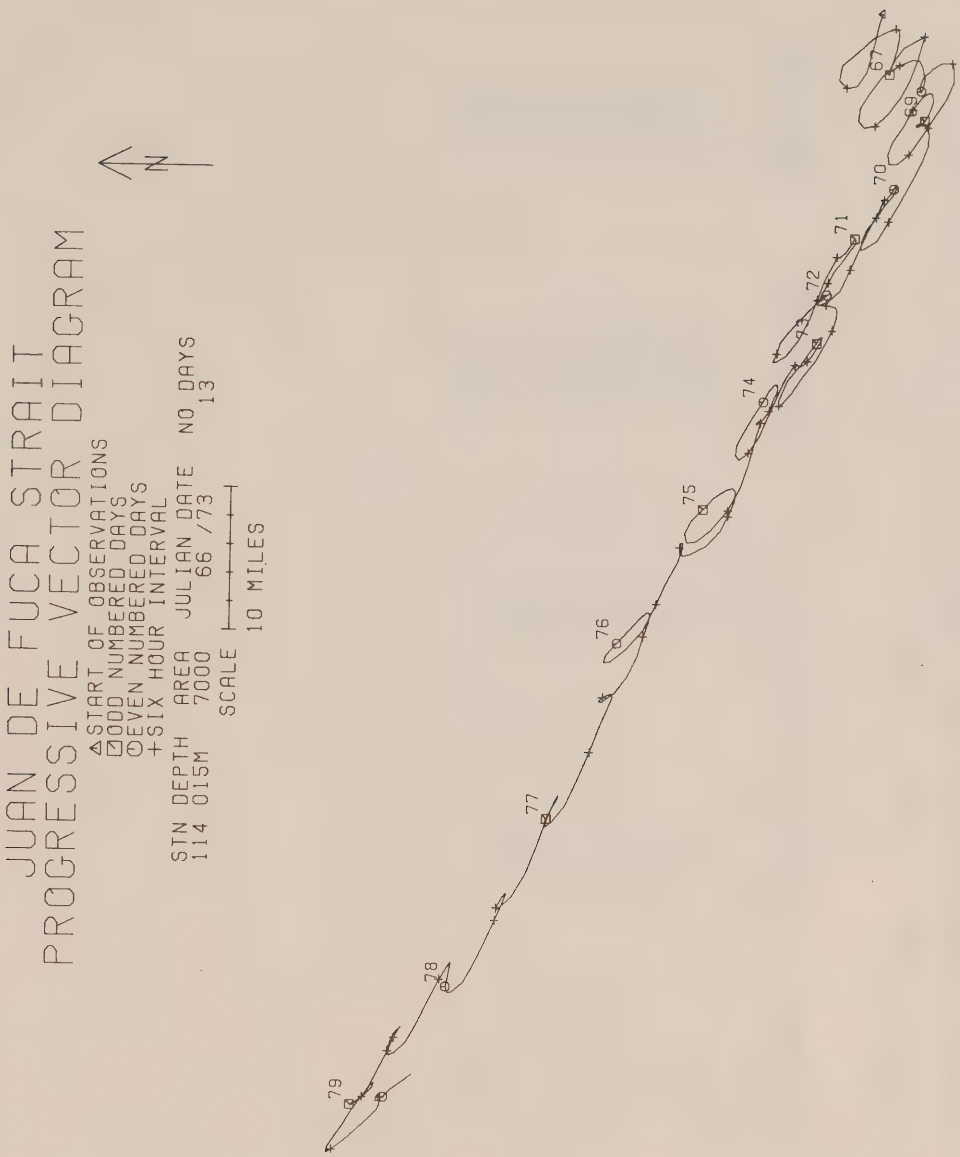
STN 114 DEPTH 015 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 14 DAYS

START OF RECORD 40 MN 08 HR 07 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	003	003	001	002		002	002																			13
10- 19	002	003	001	002		001	002																			11
20- 29	003	005	005	001	001	001	003	001																		20
30- 39	007	004	006	001				001																		19
40- 49	001	002	001			001	001																			6
50- 59	006	010	002	003	001		001	001	001																	25
60- 69	001	003	001	004	005	003	002			002																21
70- 79	001	004	003	004	004	002																				18
80- 89		003	005	006	005	006	001	001	002	001	002															32
90- 99	001	004	006	003	013	009	003	007	003	002	001	001														53
100-109	001	006	001	003	005	005	008	010	004	001	004	001	002													51
110-119	001	002	004	004	008	008	008	009	008	014	011	004	003	003												87
120-129		004	006	004	006	009	006	007	016	016	018	020	013	015	013	003										156
130-139	002	003		010	005	005	008	008	009	011	014	022	011	012	005	004	001									130
140-149		002	001	005	008	006	004	004	003	007	011	006	003	001	003	005										69
150-159	003	005	001	006	007	004	005	003	004	002	002	005	002	001												50
160-169		003	004	004	007	002	001	001	003	001	001															27
170-179		004	010	003	004		001		002	001																25
180-189	002	006	006	002	003	001	002																			22
190-199	001	004	002	008	004	001																				20
200-209	002	001		003	001																					7
210-219		001	001	001	002																					5
220-229	001	006	004		001																					12
230-239		005	003	005																						13
240-249	001	005	003	003	002	002		001																		17
250-259		003	003	002	005	002		001																		16
260-269		004	002	004	004	005	003		003	002																27
270-279	001	005	003	001	003	007	005	008	002	001	002	002														40
280-289	003	003	004	004	009	009	007	012	006	011	005	005	001	005	004	006		001	001	006	006					108
290-299	003	004	006	013	018	015	010	016	018	012	014	015	017	029	029	045	034	036	014	011	011	009	007			386
300-309	001	002	009	004	006	009	011	006	007	006	010	009	008	016	018	019	016	006	003	002	005					173
310-319	004	001	007	009	006	007	005	001	002	006	003	005	003	010	008	005	002	003	005	001						93
320-329	001	004	003	009	011	004	005	003	006	003	001	007	005	006		001	001	001								71
330-339	003	006	008	004	006	006	002	004	006	004	004	002	002													57
340-349	002	001	007	006	006	002	003	002	004	003																36
350-359	003	003	001		003	003	001	003	001																	18
	60	134	130	143	169	137	110	110	110	106	103	104	70	98	80	88	54	47	23	20	22	9	7	0	0	1934

NUMBER OF ZERO RATES 53


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
114 015M 7000 66 /73 13
SCALE
10 MILES
N
67
69
70
71
72
73
74
75
76
77
78
79

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 015 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 10 HR 07 DAY 03 MON 73 YR

LENGTH OF DATA 13 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	12.7	.0	156.1	.0
O1	19.7	-2.5	149.6	250.5
K1	21.0	-1.6	147.2	259.0
OO1	3.4	.1	149.9	308.5
M2	49.7	-8.3	148.9	245.7
S2	20.6	-3.9	152.4	266.4
M4	5.1	-2.0	50.0	310.8
MS4	3.6	-1.1	52.6	340.9
M6	.4	.2	106.2	312.9
M8	.7	-.5	137.8	180.0

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 015 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 8 1973

MAJOR COMPONENT	0	-3	-12	-10	-11	-8	-13	-18	-24	-27
MINOR COMPONENT	-6	-2	0	2	1	-2	3	2	3	-3

MAR. 18 1973

MAJOR COMPONENT	-29	-22	2
MINOR COMPONENT	2	6	-3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

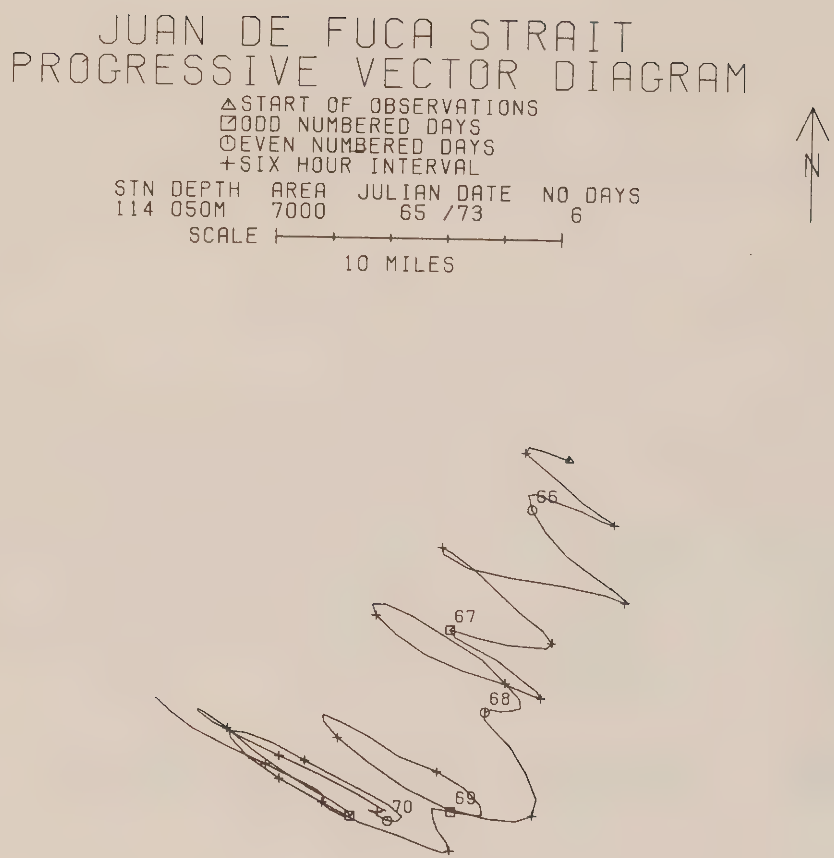
STN 114 DEPTH 050 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 7 DAYS

START OF RECORD 10 MN 10 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	001	001																							7
10- 19				001																						1
20- 29	003	002	003																							8
30- 39	002	002																								4
40- 49	001		001																							2
50- 59		003																								3
60- 69			001	001																						2
70- 79	001		002	002																						5
80- 89			002	004		002																				8
90- 99		001					002																			3
100-109	001	002		002	001		001	002	002	003	002		001			001										18
110-119		001		003	002	001	004		004	007	009	007	007	006	002	004	001									58
120-129	003	003	001	001	004	010	013	010	014	013	014	012	017	013	008	002	001									139
130-139	001	001	001	003	003	004		002	008	005	009	010	006	004												57
140-149	001	003	003	004	006	004	007	002	001	001	004	006	001													43
150-159	001	001		001	002		001		001	001	004	001														13
160-169			003	006	012	001	001	002	001	001	001															28
170-179			003	003		001																				7
180-189	001	002	001	001	002			001																		8
190-199	002	001	003	001			001																			8
200-209	001		002			001																				4
210-219	001	003	005	002		002																				13
220-229			004		001																					5
230-239	001	001	004	001		001																				8
240-249		002	001	001		001																				5
250-259	001	003	003	002			001																			10
260-269	001	002	003	004	007		001	001	002																	21
270-279	001	006	006	003	009	004	006		003	002	001	001	001	001	001			001	001	002						49
280-289	002	001	006	013	009	015	002	003	002	003	006	006	002	003	010	007	006	003	004	001						104
290-299	002	004	004	010	003	001	009	005	006	008	007	004	007	010	009	011	016	004								120
300-309	002	004	004	006	004	002	003	003	002	002	003	009	002	007	005	004	005	004								71
310-319		006	002	004	001		001	001	002	006			001	002												26
320-329	002	002	001		002	001	003	004	001	001																17
330-339	004		001	001	001	002	001																			10
340-349	001	002		002	003																					8
350-359																										0
	41	59	71	82	72	53	57	36	49	53	60	56	45	46	35	29	29	12	5	3	0	0	0	0	0	893

NUMBER OF ZERO RATES 19


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
114 050M 7000 65 /73 6
SCALE
10 MILES
N
66
67
68
69
70

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 050 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 12 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 6 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	5.4	.0	41.9	180.0
K1	30.0	-4.3	148.8	231.2
M2	52.7	-3.7	151.5	220.4
M4	3.4	-1.0	42.8	221.1
M6	.8	.4	31.6	80.9
M8	.8	-.2	94.2	355.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 050 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT	0	5	2	-4	-4
MINOR COMPONENT	-12	-4	-8	-3	-1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 33 DAYS

START OF RECORD 10 MN 10 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	006	003	002																							11
10- 19	006	008																								14
20- 29	005	003	001		001																					10
30- 39	002	004	001		001																					8
40- 49	006	004	004																							14
50- 59	005	009		001																						15
60- 69	004	005																								9
70- 79	002	007	008	004	001																					22
80- 89	005	011	010	005	004																					35
90- 99	007	008	018	021	028	024	013	007	008	004	004	002	001	001												146
100-109	002	014	021	029	025	024	023	014	020	016	012	015	011	008	003	004		001	002							244
110-119	009	010	020	031	059	051	060	036	072	058	060	071	068	061	057	041	032	016	013	006	001					832
120-129	006	014	022	029	053	044	046	052	052	044	043	044	056	075	049	046	052	057	054	020	013	009				880
130-139	006	009	014	015	023	013	013	004	004	006	006	003	005	007	001	008	003	004		001	009	007	004			165
140-149	007	014	018	013	011	010	006	004	008	002	002	001	002	002							001	004	005	002		112
150-159	005	013	017	007	005	003	002	002	002	002	001															59
160-169	003	012	006	005	002	003	002	001																		34
170-179	003	003	004	004	003		001																			18
180-189	005	010	005	003	002	001																				26
190-199	005	007	005	004			001																			22
200-209	003	005	003	001	001																					13
210-219	002	003	003		005	001																				14
220-229	001	004	006	008	002	001																				22
230-239	003	010	007	003	001	001	001																			26
240-249	003	004	010	015	001	002	001	002	001																	39
250-259	002	007	014	009	013	015	005	005	002	002			002	002	005	001										84
260-269	001	008	013	005	012	013	005	006	008	006	004	007	006	002	003	003	001									103
270-279	006	013	023	025	036	024	017	034	028	018	024	031	010	011	010	012										322
280-289	005	015	023	029	035	030	039	034	029	026	024	024	026	013	009	008	007	001								377
290-299	001	006	013	016	018	027	032	029	035	019	018	014	012	007	006	007	007									267
300-309	006	011	018	020	033	048	024	040	021	019	017	019	005	006	005	002										294
310-319	004	011	013	016	018	011	008	004	008	004	002	002														101
320-329	003	009	008	004	005	001	001	001		001																33
330-339	008	006	015	015	003		001		001																	49
340-349	004	008	008	004	001	001		001																		27
350-359	003	004	005			001																				13
	154	292	358	341	402	349	301	276	299	227	217	233	204	195	148	132	102	79	69	27	24	20	9	2	0	4460

NUMBER OF ZERO RATES 226

JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 12 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 32 DAYS 9 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	13.0	.0	136.5	180.0
Q1	2.5	-.1	133.6	212.4
O1	13.0	2.3	145.0	235.0
NO1	2.3	.6	152.8	301.2
K1	20.6	.7	150.4	247.5
J1	1.5	.6	165.0	336.3
OO1	.8	-.2	147.8	310.2
MU2	2.0	-.6	135.4	71.7
N2	7.5	1.2	146.0	224.1
M2	49.3	-3.0	154.5	244.3
L2	2.1	.3	68.3	315.6
S2	15.5	-1.9	165.4	264.4
MN4	1.8	-.5	102.7	345.9
M4	2.2	.3	92.7	316.7
MS4	1.5	.3	81.8	346.0
M6	.9	-.2	174.4	291.1
M8	.4	-.2	132.9	291.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT										
	10	14	15	12	9	12	8	15	19	17
MINOR COMPONENT										
	-4	-5	-6	-3	-6	-3	-4	-2	-1	-1

MAR. 17 1973

MAJOR COMPONENT										
	13	15	9	4	7	0	4	9	13	16
MINOR COMPONENT										
	-1	-4	-2	-9	-6	-4	-1	0	-1	0

MAR. 27 1973

MAJOR COMPONENT										
	20	18	20	19	9	8	12	15	14	13
MINOR COMPONENT										
	-5	-5	-3	-4	-2	-4	-8	-4	-8	-11

APR. 6 1973

MAJOR COMPONENT	
	19
MINOR COMPONENT	
	-10

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

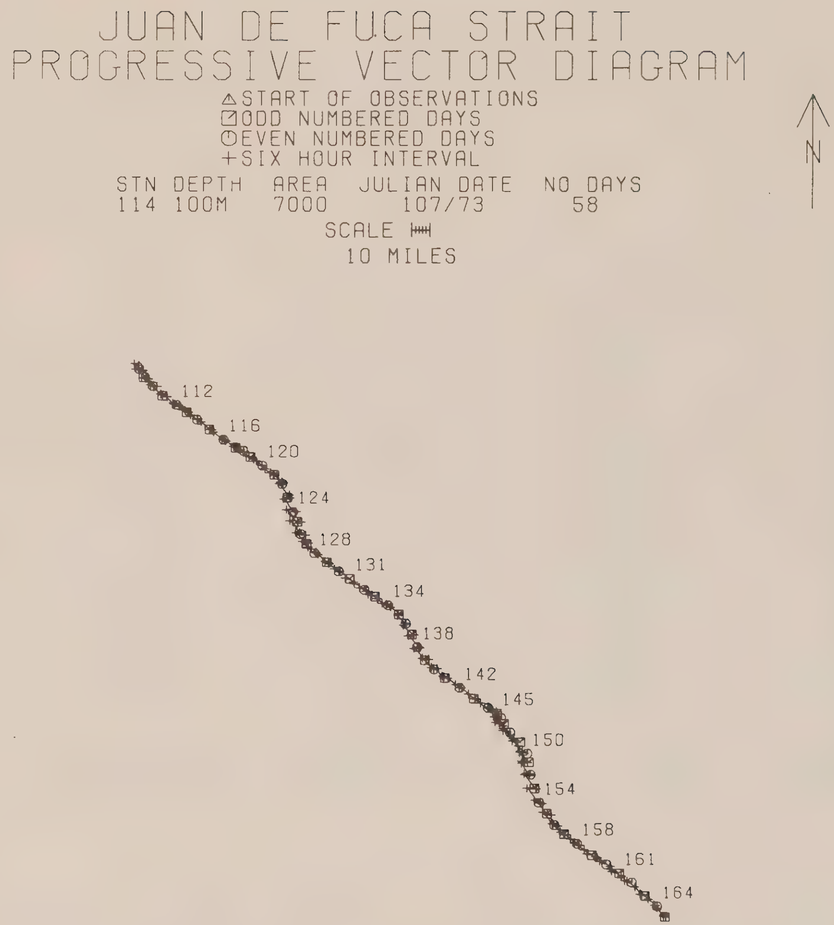
STN 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 59 DAYS

START OF RECORD 10 MN 07 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	005	002																							12
10- 19	001	005	002																							8
20- 29	005	004	005																							14
30- 39	006	003	004																							13
40- 49	011	014	003	001																						29
50- 59	003	012	009		001																					25
60- 69	005	010	011	009	003	001																				39
70- 79	005	019	025	014	017	010	005	002	001																	98
80- 89	008	016	019	024	032	033	023	007	003																	165
90- 99	009	033	037	064	081	078	056	060	030	018	004															470
100-109	009	021	028	044	056	044	050	061	053	042	037	020	007	002												474
110-119	010	027	035	054	074	071	079	081	120	094	078	084	063	064	033	020	009	004								1000
120-129	010	016	044	034	047	037	054	045	067	073	063	081	085	111	119	106	120	088	050	024	005	001				1280
130-139	005	012	012	014	016	023	016	019	018	007	013	006	014	018	020	022	050	080	074	037	030	007	005	002	003	523
140-149	008	015	021	024	018	014	013	008	004	005	003	005		001	001	006	004	012	039	030	027	023	008	006	004	299
150-159	007	019	016	015	021	008	004	002	002		001								002		003	019	010	004	003	136
160-169	002	009	012	014	008	001	002																			48
170-179	005	009	010	008	005	001	001																			39
180-189	009	009	012	006	004																					40
190-199	009	011	020	009	003																					52
200-209	005	009	013	002	003																					32
210-219	006	012	022	013	003																					56
220-229	012	009	011	007	005	001																				45
230-239	004	008	012	010	004	001																				39
240-249	004	011	014	019	016	004	005	001																		74
250-259	012	023	029	026	025	018	005	002	002	003	002	004	004													155
260-269	007	016	035	032	022	013	006	004	003	005	009	007	004	007	002	002	003									177
270-279	006	035	065	055	080	046	042	039	040	039	044	034	027	039	023	016	004	003								637
280-289	009	016	056	053	093	059	064	068	074	054	054	043	027	029	019	014										732
290-299	013	029	032	038	045	047	042	050	042	030	018	013	013	005	004	002	001									424
300-309	018	036	041	048	061	051	043	042	022	012	006	003	003	004	002											392
310-319	012	021	029	026	033	016	005	002																		144
320-329	005	006	014	005	003	001																				34
330-339	009	014	021	009	003		001																			57
340-349	012	015	006	003		001																				37
350-359	005	006	003	001	002																					17
	271	535	730	681	784	579	516	493	481	382	332	300	247	280	223	188	191	187	165	91	65	50	23	12	10	7816

NUMBER OF ZERO RATES 552


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
114 100M 7000 107/73 58
SCALE
10 MILES
N
112
116
120
124
128
131
134
138
142
145
150
154
158
161
164

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 09 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 57 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	15.9	.0	133.9	180.0
Q1	2.5	1.6	156.8	274.4
O1	12.1	4.0	128.8	235.2
NO1	1.5	1.2	8.8	140.5
K1	28.5	4.0	140.6	239.5
J1	2.2	.9	144.2	290.6
OO1	1.7	-1.4	166.4	221.8
MU2	2.6	-.2	132.0	128.3
N2	10.5	-1.3	148.4	233.9
M2	46.3	-3.0	154.4	253.0
L2	1.4	-.2	165.8	62.9
S2	8.0	-1.5	147.7	254.0
MN4	2.0	-.5	64.7	327.7
M4	4.9	-.7	69.3	343.4
MS4	2.2	-.4	56.6	359.3
M6	1.0	-.1	27.4	86.5
M8	.6	-.3	54.1	75.2

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 100 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973										
MAJOR COMPONENT	10	15	15	21	15	15	18	20	17	10
MINOR COMPONENT	-6	-5	-6	-3	-3	-3	-4	-4	-3	1
APR. 28 1973										
MAJOR COMPONENT	10	17	18	13	14	14	10	11	11	13
MINOR COMPONENT	-3	-3	-4	-6	-12	-13	-9	-11	-8	-6
MAY 8 1973										
MAJOR COMPONENT	18	17	15	21	15	19	17	12	14	12
MINOR COMPONENT	-4	-4	-2	-4	-2	-3	-4	-7	-9	-11
MAY 18 1973										
MAJOR COMPONENT	15	15	16	21	21	20	13	7	5	11
MINOR COMPONENT	-10	-5	-4	-3	-5	-3	-1	-3	-5	-6
MAY 28 1973										
MAJOR COMPONENT	15	14	6	9	12	13	15	15	15	19
MINOR COMPONENT	-5	-9	-9	-13	-13	-13	-8	-9	-5	-3
JUNE 7 1973										
MAJOR COMPONENT	21	19	18	18	21	19	15			
MINOR COMPONENT	-5	-2	-4	-4	-8	-5	-8			

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

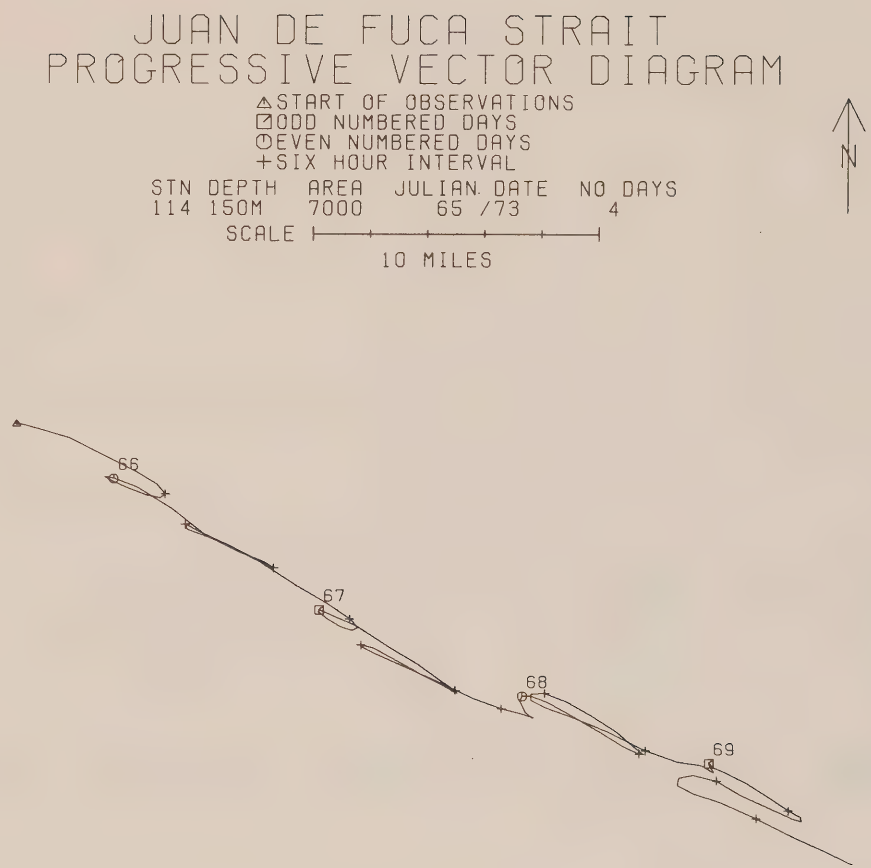
STN 114 DEPTH 150 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 5 DAYS

START OF RECORD 10 MN 12 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	Total
0- 9	002	002		001																						5
10- 19		001																								1
20- 29	001		001																							2
30- 39																										0
40- 49		002																								2
50- 59	001		001																							2
60- 69	001	001																								2
70- 79		004	001																							5
80- 89		003	002			001																				6
90- 99		001	003	001	003	002	002	002	001	002																17
100-109		001		001	003	001	007	006	005	008	006	003	002	004												47
110-119	001	003	002	005	003	014	013	011	015	012	013	009	023	019	020	011	002									176
120-129		001	002	004	008	004	002	004	008	008	009	006	005	010	008	010	002									91
130-139		001		004	005		004									002										16
140-149			002	003	001																					6
150-159	001		003	001																						5
160-169		002	001																							3
170-179				001																						1
180-189			003	001																						4
190-199	002	001	002																							5
200-209	001			001																						2
210-219		003	002																							5
220-229	001	001	001	001																						4
230-239	001	001	001	001																						4
240-249				001																						1
250-259		002		002	001	001																				6
260-269	001		003		003	002	003																			12
270-279		001	005	002	002	002	002	001				001														16
280-289		002	001		005	004	002	005	002	001	002	002														26
290-299	001	001	002	002	004	009	006	009	012	008	007	006	002													69
300-309			003	004	005	007	003	003	006	003	007	005	001													47
310-319			001	002	002	001	001	001	002			001	001													12
320-329	002	003	002	002	004																					13
330-339	002	002	004		001																					9
340-349		002	002		001																					5
350-359	001	002		001																						4
	19	43	50	41	51	48	45	42	51	42	44	33	34	33	28	23	4	0	0	0	0	0	0	0	0	631

NUMBER OF ZERO RATES 5


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
◻ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
114 150M 7000 65 /73 4
SCALE
10 MILES
N
66
67
68
69

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 150 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 14 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 4 DAYS 5 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	13.6	.0	151.7	180.0
K1	17.1	.6	157.7	231.5
M2	52.4	.2	153.1	222.2
M4	1.1	-.6	166.4	288.4
M6	2.6	-1.2	76.6	324.1
M8	1.1	-.4	156.1	353.0

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 150 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT			
	19	17	15
MINOR COMPONENT			
	-2	0	2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

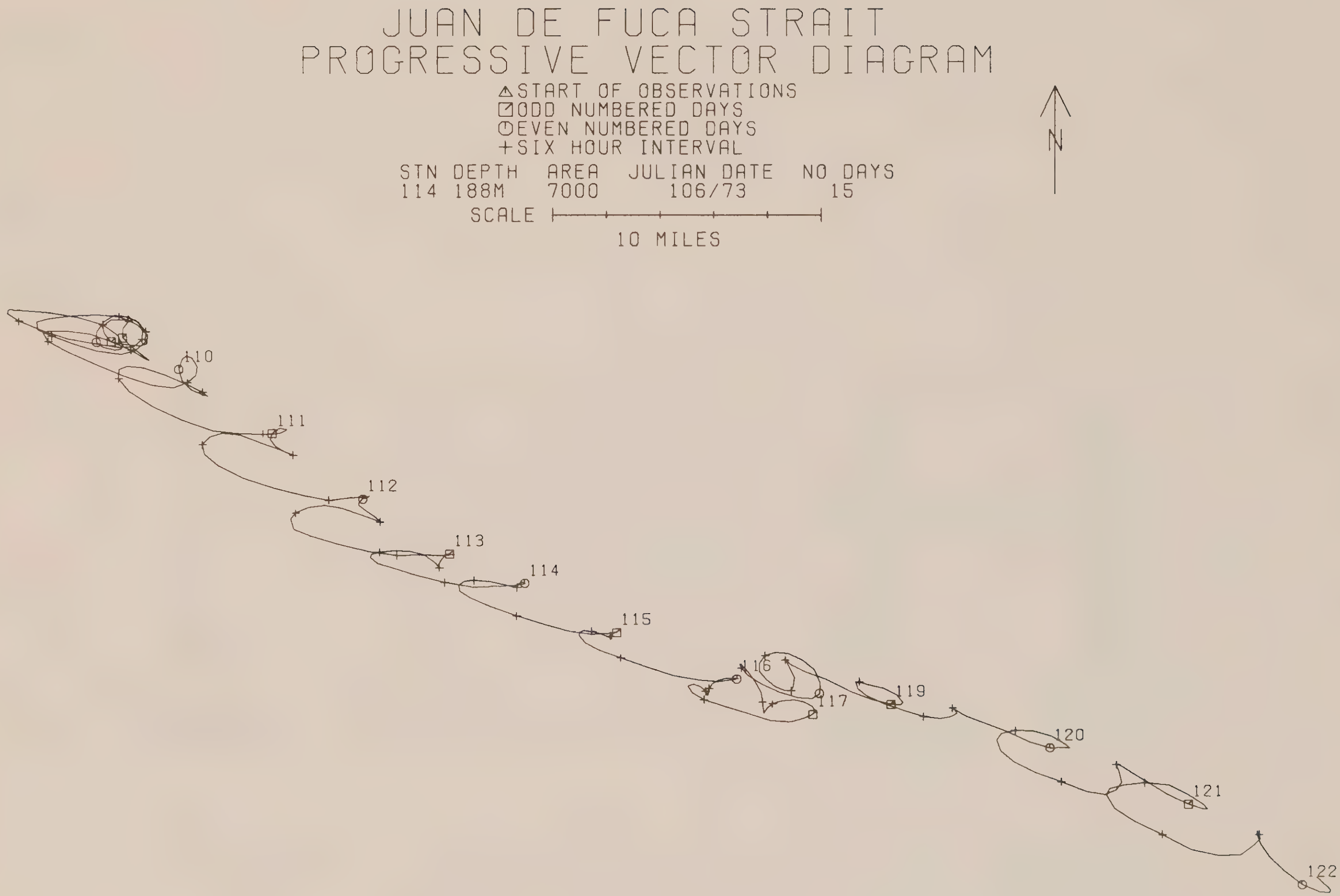
STN 114 DEPTH 188 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W LENGTH OF RECORD= 16 DAYS

START OF RECORD 00 MN 19 HR 16 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	002	001	004	007	004																					18
10- 19	001	001	003	007	001																					13
20- 29		001	002	004	001																					8
30- 39	002	005	003	003	005		001																			19
40- 49	005	003	003	002	004	001																				18
50- 59	003	003	004	003	007	005	002																			27
60- 69		005	006	002	001	002	003																			19
70- 79	001	003	009	008	016	009	006	001	001																	54
80- 89	001	004	003	012	007	010	014	013	009	005																78
90- 99	001	001	008	006	008	008	016	016	015	019	006	004														108
100-109	001	002	004	004	005	006	011	016	024	023	027	026	009	003												161
110-119	003	005	003	012	018	015	023	026	039	041	029	023	019	003												259
120-129		001	003	012	035	016	006	007	015	006	003	002	005													111
130-139	002	007	003	012	016	005	006	003	003																	57
140-149	005	005		016	007	006	006	001																		46
150-159	001	005	005	005	008	008		001																		33
160-169	003	003	007	009	006																					28
170-179	002	006	005	008	005																					26
180-189	007	007	007	007	004																					32
190-199	005	011	006	008	001																					31
200-209	006	007	011	009	004	001																				38
210-219	004	007	007	006	007	002																				33
220-229	002	009	014	005	006																					36
230-239	003	019	015	010	005																					52
240-249	002	006	013	005	013	005		001																		45
250-259	001	004	011	007	009	009	002	003	001																	47
260-269	001	004	010	009	015	009	015	006	005	008	002															84
270-279	001	007	007	008	015	011	012	008	014	006	003	001	001													94
280-289	003	007	011	013	013	012	003	012	010	009	001	003														97
290-299	002	005	003	006	009	015	011	019	021	006																97
300-309	001	005	011	006	006	011	005	005	005																	55
310-319		006	005	009	014	008	006																			48
320-329	001	003	012	008	010	002																				36
330-339	002	007	012	012	011	005																				49
340-349	001	001	005	008	004	001																				20
350-359		007	005	009	009																					30
	75	183	240	277	309	182	148	138	162	123	71	59	34	6	0	0	0	0	0	0	0	0	0	0	0	2007

NUMBER OF ZERO RATES 214


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
114 188M 7000 106/73 15
SCALE
10 MILES
N
110
111
112
113
114
115
116
117
119
120
121
122

TIDAL CURRENT ELLIPSE

STN 114 DEPTH 188 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 21 HR 16 DAY 04 MON 73 YR

LENGTH OF DATA 15 DAYS 5 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	6.8	.0	155.3	180.0
O1	8.8	1.3	167.6	226.1
K1	20.4	1.2	172.2	236.7
OO1	1.6	-.1	16.7	80.8
M2	28.6	10.0	159.4	231.1
S2	5.6	3.7	158.0	245.8
M4	1.0	-.8	123.4	318.3
MS4	.6	-.2	133.3	354.0
M6	1.1	.4	30.2	66.8
M8	.3	.1	71.0	329.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 114 DEPTH 188 JUAN DE FUCA ST. 48 17.3 N 124 6.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 17 1973

MAJOR COMPONENT									
-1	2	5	9	9	8	6	8	10	7
MINOR COMPONENT									
0	1	0	-2	-2	-1	0	-1	1	0

APR. 27 1973

MAJOR COMPONENT				
0	4	13	12	11
MINOR COMPONENT				
2	2	2	1	-2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

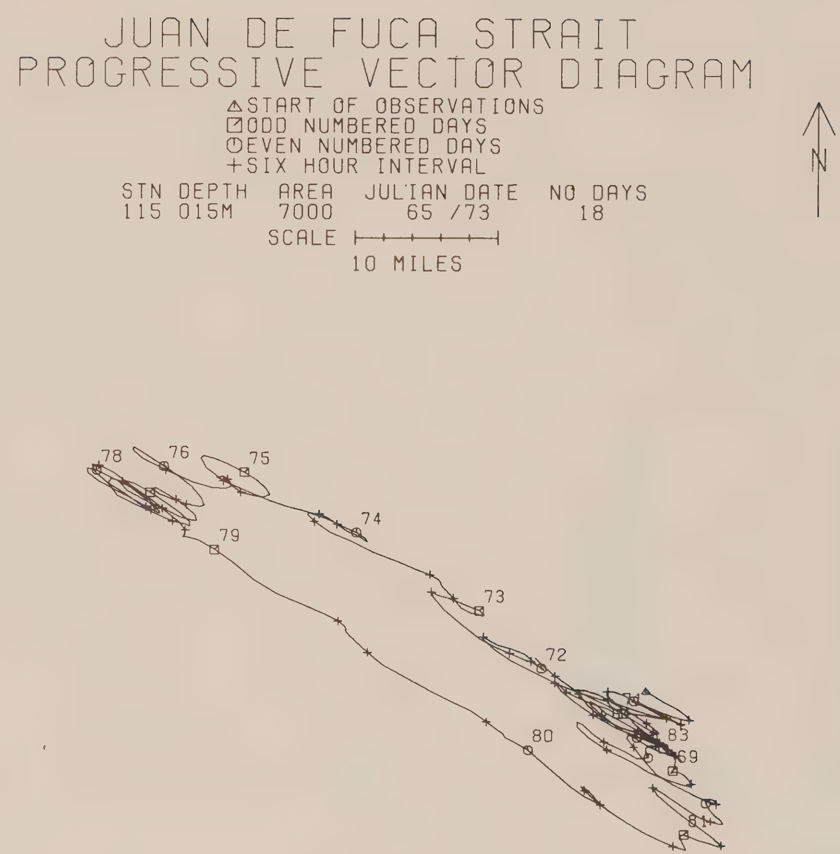
STN 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 19 DAYS

START OF RECORD 30 MN 13 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	001	003	005	004	001																				18
10- 19	006	005	007	002	002																					22
20- 29	002	004	004	001																						11
30- 39	001	004	002	003	001																					11
40- 49	002	001	004	004																						11
50- 59	001	004	008	006																						19
60- 69	003	010	010	006																						29
70- 79	001	002	006	007	002																					18
80- 89		003	001	009	005	003																				21
90- 99	005	008	002	014	017	006	008	004	005	001	001															71
100-109	003	001	007	007	015	002	019	020	011	016	011	003	001													116
110-119	002	007	010	009	020	018	020	025	031	041	050	034	018	021	016	011	007	004	008	004	004	002				362
120-129	001	002	008	008	014	016	018	021	030	025	028	027	027	031	016	012	008	004	006	005	003					310
130-139			009	007	011	011	010	013	018	014	008	010	010	012	007	004		002	001	002						149
140-149		004	002	011	010	006	004	005	003	003			001													49
150-159	001	007	010	013	002	005	001	001																		40
160-169	001	004	001	004	002	003																				15
170-179	001	001	003	005	003																					13
180-189	002	002	001	004	004																					13
190-199	002			003	003																					8
200-209		004	005	006	003																					18
210-219	001	004	002	001		001																				9
220-229		003	006																							9
230-239	002	005	005		004																					16
240-249		003	003	003	001		001																			11
250-259	001	003	003	003	002	002	002																			16
260-269	005	001	009	006	011	006	003	002	002					001												46
270-279	003	002	003	002	013	004	001	006	002	010	001	001														48
280-289	001	007	008	002	012	009	014	007	010	011	009	009	007	011	007	009	001	001			001					136
290-299		011	010	011	015	014	011	022	013	019	023	018	023	039	034	041	020	018	024	008	008	005	001			388
300-309	001	002	014	013	013	014	003	010	007	011	007	008	014	018	022	020	003	007	003	001						191
310-319	004	004	011	017	007	006	010	012	012	005	012	009	010	008	010	003	004	001								145
320-329	001	003	004	008	007	010	008	005	009	009	005	003	001													73
330-339	001	006	004	007	013	011	006	001	004		001	001														55
340-349	004	007	005	012	008		003	001	001																	41
350-359	001	003	003	005	003	001	001																			17
		138		224		149		155		165		123		141		100		37		20		7		0		2525
	63		193		227		143		158		156		112		112		43		42		16		1		0	

NUMBER OF ZERO RATES 75


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 015M 7000 65 /73 18
SCALE
10 MILES
N
78
76
75
74
79
73
72
80
83
69
81

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 15 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 17 DAYS 21 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	.6	.0	169.6	.0
O1	19.5	-1.6	152.4	249.0
K1	22.6	-.5	151.7	265.1
OO1	1.9	.1	113.9	322.9
M2	45.9	-5.2	151.3	245.7
S2	16.5	-1.9	146.9	258.0
M4	2.8	-1.5	108.7	206.3
MS4	2.2	.1	26.4	328.7
M6	1.4	-.7	44.3	238.4
M8	.7	-.3	75.2	172.3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT	0	4	6	-4	-7	-14	-12	-23	-20	-11
MINOR COMPONENT	-2	-2	-2	-1	4	2	3	3	1	-4

MAR. 17 1973

MAJOR COMPONENT	-1	-7	20	56	28	2	-9
MINOR COMPONENT	-5	-1	-3	-7	-2	5	5

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 59 DAYS
START OF RECORD 00 MN 11 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	022	020	007																							49
10- 19	023	020	003																							46
20- 29	013	010	001																							24
30- 39	010	019	003																							32
40- 49	020	014	003																							37
50- 59	018	017	005																							40
60- 69	027	026	008																							61
70- 79	020	015	010	002																						47
80- 89	012	045	029	011	001		001																			99
90- 99	040	053	068	052	018	007	003																			241
100-109	014	049	094	063	059	031	008	001	001																	320
110-119	026	072	144	126	113	102	131	049	034	009	001															807
120-129	028	064	089	096	078	105	117	059	060	034	007															737
130-139	025	089	079	044	040	034	027	010	006	006	002															362
140-149	015	031	035	013	007	003	002																			106
150-159	026	055	023	004	003																					111
160-169	021	025	019	005																						70
170-179	017	021	006																							44
180-189	022	015	009																							46
190-199	012	006	001																							19
200-209	015	015	003																							33
210-219	017	006	002																							25
220-229	014	010	002																							26
230-239	033	013	007	001																						54
240-249	018	035	008																							61
250-259	017	027	010	001																						55
260-269	030	050	036	008	001																					125
270-279	020	060	058	030	010	008	006	002	001																	195
280-289	023	080	142	089	060	038	040	031	029	019	014	013	006	003	001											588
290-299	031	111	179	164	145	138	211	214	200	161	059	052	018	002												1685
300-309	026	053	137	143	092	075	076	066	035	024	008	014	003	001												753
310-319	021	070	133	094	060	075	032	015	004	001			001													506
320-329	030	046	062	040	026	010	009	001																		224
330-339	020	040	062	022	007	004	001																			156
340-349	019	055	031	011	002																					118
350-359	017	036	021	004	002																					80
		1373		1023		630		448		254		79		6		0		0		0		0		0		7982
	762		1529		724		664		370		91		28		1		0		0		0		0		0	

NUMBER OF ZERO RATES 507


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
N
STN DEPTH AREA JULIAN DATE NO DAYS
115 015M 7000 107/73 58
SCALE
10 MILES
113
115
118
119
120
121
122
143
154
156
158
160
162
163
164
166

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 13 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 58 DAYS 19 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	10.9	.0	152.7	.0
Q1	3.4	.9	160.3	237.7
O1	17.6	.5	151.7	243.9
NO1	2.0	.6	161.1	243.4
K1	29.5	.3	154.7	248.6
J1	2.3	.0	138.0	299.7
OO1	1.6	.3	163.0	295.5
MU2	5.0	-2.1	130.4	121.7
N2	11.0	-.2	152.1	227.7
M2	44.7	-2.9	150.7	237.8
L2	1.3	.3	171.2	51.3
S2	9.6	-1.1	162.0	245.4
MN4	.7	.2	123.0	265.1
M4	2.4	-.7	62.5	239.3
MS4	1.2	-.1	68.4	271.7
M6	.8	-.5	104.8	49.9
M8	.3	-.3	44.3	21.8

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 015 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973										
MAJOR COMPONENT										
	2	-9	-12	-13	-14	-16	-12	-12	-9	-21
MINOR COMPONENT										
	0	-2	0	1	2	1	1	4	4	6
APR. 28 1973										
MAJOR COMPONENT										
	-27	-35	-34	-30	-27	-22	-7	-3	2	3
MINOR COMPONENT										
	4	4	5	5	0	1	2	-3	-4	0
MAY 8 1973										
MAJOR COMPONENT										
	0	9	11	8	0	-7	-10	-12	-9	-4
MINOR COMPONENT										
	-1	1	1	1	4	0	0	0	-3	0
MAY 18 1973										
MAJOR COMPONENT										
	-11	-13	-9	-10	-6	-4	24	40	2	-19
MINOR COMPONENT										
	-1	1	-1	0	-1	1	-3	-2	1	1
MAY 28 1973										
MAJOR COMPONENT										
	-24	-8	-6	-13	-20	-17	-15	-19	-17	-21
MINOR COMPONENT										
	-1	-6	0	-2	0	1	1	2	1	2
JUNE 7 1973										
MAJOR COMPONENT										
	-25	-18	-10	-23	-27	-26	-23	-7		
MINOR COMPONENT										
	0	-1	-1	-1	0	0	2	-2		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

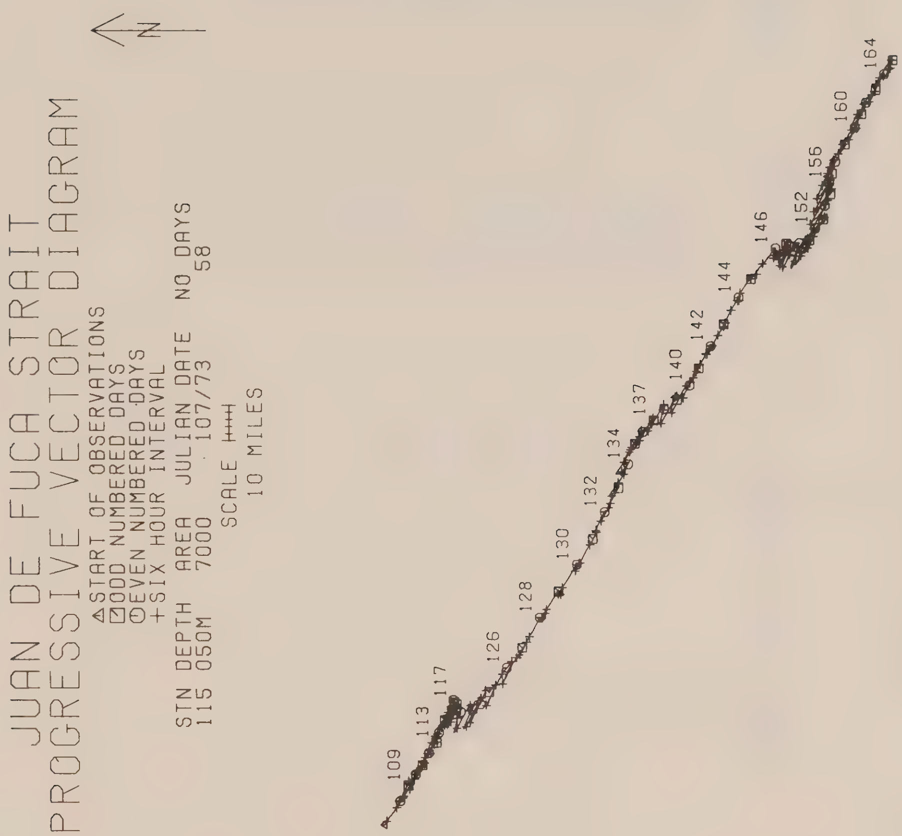
STN 115 DEPTH 050 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 59 DAYS

START OF RECORD 30 MN 10 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	014	011																								25
10- 19	019	006																								25
20- 29	021	012																								33
30- 39	002	002																								4
40- 49	024	002																								26
50- 59	021	003																								24
60- 69	034	011	002																							47
70- 79	018	017	005																							40
80- 89	022	025	009	002																						58
90- 99	029	044	026	013	004																					116
100-109	026	057	078	048	021	005	008	004	002	002	001															252
110-119	035	097	133	125	137	129	109	119	088	062	037	029	007													1107
120-129	034	077	096	103	085	082	080	070	083	047	023	014	008													802
130-139	034	076	075	053	042	013	009	002	006																	310
140-149	041	049	031	018	003																					142
150-159	026	022	010	002																						60
160-169	027	023	004																							54
170-179	021	011	001																							33
180-189	018	006	001																							25
190-199	028	008																								36
200-209	028	013																								41
210-219	017	012																								29
220-229	020	007																								27
230-239	024	024	002																							50
240-249	026	022	010	001																						59
250-259	022	021	014	002																						59
260-269	030	047	033	006	004	001	001																			122
270-279	030	065	038	010	011	008	003	001	004																	170
280-289	024	067	083	033	031	026	029	023	008	006																330
290-299	038	074	114	074	080	093	065	036	031	012	004	002	001													624
300-309	032	053	052	055	064	047	046	022	007	006	004	006														394
310-319	032	046	048	027	023	015	008	002	002	006	005	005	001													220
320-329	030	036	018	008	002	003	001		001	001																100
330-339	021	017	008	007	002	001			001																	57
340-349	021	015	005	002																						43
350-359	022	007	005																							34
	911	1085	901	589	509	423	359	279	233	142	74	56	17	0	0	0	0	0	0	0	0	0	0	0	0	5578

NUMBER OF ZERO RATES 1


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 050M 7000 107/73 58
SCALE
10 MILES
N
109
113
117
126
128
130
132
134
137
140
142
144
146
152
156
160
164

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 050 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 12 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 57 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.4	.0	146.1	180.0
Q1	3.1	-.2	145.2	245.7
O1	15.4	-.3	148.2	241.8
NO1	2.4	-.1	158.2	279.4
K1	32.6	-1.2	151.1	242.6
J1	2.4	-.5	140.9	313.5
OO1	1.9	-.1	129.8	267.7
MU2	2.8	1.0	148.1	153.8
N2	10.6	.6	147.2	224.7
M2	46.5	-.1	153.5	243.5
L2	1.5	.2	81.4	335.7
S2	9.1	-.2	157.0	262.8
MN4	.4	.1	73.1	254.5
M4	1.1	.5	142.1	38.5
MS4	.4	-.4	137.8	156.9
M6	.5	.1	5.6	175.8
M8	.5	-.3	167.3	113.9


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 050M 7000 107/73 58
SCALE
10 MILES
N
109
113
117
126
128
130
132
134
137
140
142
144
146
152
156
160
164

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 050 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 12 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 57 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.4	.0	146.1	180.0
Q1	3.1	-.2	145.2	245.7
O1	15.4	-.3	148.2	241.8
NO1	2.4	-.1	158.2	279.4
K1	32.6	-1.2	151.1	242.6
J1	2.4	-.5	140.9	313.5
OO1	1.9	-.1	129.8	267.7
MU2	2.8	1.0	148.1	153.8
N2	10.6	.6	147.2	224.7
M2	46.5	-.1	153.5	243.5
L2	1.5	.2	81.4	335.7
S2	9.1	-.2	157.0	262.8
MN4	.4	.1	73.1	254.5
M4	1.1	.5	142.1	38.5
MS4	.4	-.4	137.8	156.9
M6	.5	.1	5.6	175.8
M8	.5	-.3	167.3	113.9

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 050 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973										
MAJOR COMPONENT	11	8	7	8	8	6	8	7	4	1
MINOR COMPONENT	0	-1	-1	-1	-1	1	1	-1	0	1
APR. 28 1973										
MAJOR COMPONENT	-2	-2	-2	2	5	6	9	17	15	21
MINOR COMPONENT	-3	1	0	-5	-5	-3	-2	-3	-3	-2
MAY 8 1973										
MAJOR COMPONENT	19	18	18	17	16	16	13	9	9	9
MINOR COMPONENT	-3	-3	-3	1	-1	1	2	-2	-3	-3
MAY 18 1973										
MAJOR COMPONENT	9	11	12	15	15	18	13	22	6	-1
MINOR COMPONENT	-5	-3	-1	-1	-2	-1	-2	-5	-5	-2
MAY 28 1973										
MAJOR COMPONENT	0	3	4	7	7	9	9	6	6	7
MINOR COMPONENT	-1	-4	-5	1	-3	2	0	3	2	0
JUNE 7 1973										
MAJOR COMPONENT	11	12	8	7	9	11	10			
MINOR COMPONENT	-1	-1	0	1	-2	-1	-1			

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 35 DAYS

START OF RECORD 10 MN 14 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	004	003	001																							8
10- 19	008	005	003																							16
20- 29	001	001	002																							4
30- 39	002																									2
40- 49	003	005	002																							10
50- 59	005	009	002																							16
60- 69	005	012	008																							25
70- 79	003	018	014	008	003	001																				47
80- 89	005	014	011	019	003				001																	53
90- 99	007	016	029	019	017	018	010	007	008	004																135
100-109	004	023	036	035	047	040	038	058	068	039	032	015	010	014	013	003			002							477
110-119	005	015	021	024	027	024	034	034	050	065	054	056	040	057	051	033	010	014	010	009	002	001				636
120-129	007	012	031	028	037	036	042	039	034	030	035	031	052	069	058	046	030	032	016	002	009	001				677
130-139	009	017	023	030	045	026	016	017	016	010	006	005	008	006	008	010	005	006	002							265
140-149	002	005	014	017	008	005		001	002																	54
150-159	006	013	015	016	008		001																			59
160-169	006	015	020	004	002	001																				48
170-179	006	007	007	002																						22
180-189	002	008	008	001																						19
190-199	003	004	010																							17
200-209	010	014	012	001																						37
210-219	009	014	002																							25
220-229	007	008	008	001																						24
230-239	009	014	011		002	001																				37
240-249	006	017	008	001																						32
250-259	008	014	013	011	004																					50
260-269	004	014	016	010	010	003	003	001																		61
270-279	007	019	029	027	028	017	012	009	009	005	001	001	002	001	003	001										171
280-289	005	019	036	054	050	042	044	029	026	014	007	013	009	003	003	004	001									359
290-299	005	022	044	055	071	060	052	056	066	043	066	052	018	029	015											654
300-309	015	010	021	027	036	024	022	028	041	033	033	020	008	008	003											329
310-319	008	019	024	025	018	027	022	007	005	003																158
320-329	004	014	018	010	007	009	003	001																		66
330-339	005	009	008	002																						24
340-349	005	012	005																							22
350-359	005	003																								8
	205	424	512	427	423	334	299	287	326	246	234	193	147	187	154	97	46	52	30	11	11	2	0	0	0	4647

NUMBER OF ZERO RATES 311


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 100M 7000 65 /73 34
SCALE
10 MILES
N
67
68
69
71
73
76
78
79
81
83
85
87
96
97
98
99

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 34 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	8.5	.0	145.1	180.0
Q1	1.9	.4	138.2	186.6
O1	14.2	-.3	150.1	234.1
NO1	2.7	.5	153.3	281.8
K1	20.5	.4	152.3	241.1
J1	1.3	.2	.0	210.3
OO1	1.5	-.3	162.7	340.4
MU2	2.9	-.8	151.8	108.2
N2	7.5	.9	141.1	219.8
M2	41.2	.3	155.1	238.9
L2	1.8	.6	1.5	239.7
S2	13.2	-1.1	154.9	258.1
MN4	1.0	-.6	146.3	338.9
M4	1.9	-.1	105.6	5.1
MS4	.8	-.4	32.5	49.9
M6	.7	-.3	176.5	308.7
M8	.6	-.3	133.6	298.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973

MAJOR COMPONENT	17	15	14	13	10	8	4	4	6	6
MINOR COMPONENT	-4	-3	-3	-1	-3	-2	-4	-3	-1	-1

MAR. 17 1973

MAJOR COMPONENT	12	13	18	11	5	11	10	12	10	9
MINOR COMPONENT	-1	-1	2	-2	-3	-3	-2	-1	0	-3

MAR. 27 1973

MAJOR COMPONENT	4	1	4	-2	-4	-2	-3	1	11	13
MINOR COMPONENT	-2	0	0	0	0	1	0	-1	-1	-4

APR. 6 1973

MAJOR COMPONENT	16	16	16	13
MINOR COMPONENT	-4	-1	0	-1

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 19 DAYS
START OF RECORD 00 MN 09 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TU 124	
0- 9	003	003	001																							7
10- 19	002	004	001																							7
20- 29	005	002				001																				8
30- 39	002	003																								5
40- 49	001	003																								4
50- 59	002	001	002																							5
60- 69	007	002	001																							10
70- 79	005	001			001																					7
80- 89	003	003	002	002	003	002																				15
90- 99	006	012	007	008	006	002		001																		42
100-109	017	017	016	025	024	007	011	009	003	002	004	002		002	005											144
110-119	008	020	013	019	032	030	038	026	038	028	029	022	018	017	019	007	005	003	002		002	003	001			380
120-129	005	023	014	027	039	024	035	030	035	028	031	024	015	019	011	013	013	015	008	013	006	005	003	001		437
130-139	005	020	019	019	020	011	005	007	002	006	004	004	002	002	003	001	001	004	002	001	002					140
140-149	005	006	008	002	003																					24
150-159	006	011	010	006			001																			34
160-169	007	005	008	001																						21
170-179	003	009	001																							13
180-189	005	005	002	001																						13
190-199	002	002	003																							7
200-209	005	005																								10
210-219	001	003	005																							9
220-229	005	003	004																							12
230-239	002	008	001	002																						13
240-249	001	002	004	001																						8
250-259	007	020	007	002																						36
260-269	005	006	004	001	002																					18
270-279	013	013	014	008	011	007	003	005																		74
280-289	008	028	019	038	028	014	004	006	008	001		003	001	006	009	006										179
290-299	008	024	030	033	030	024	017	029	033	018	022	023	016	009	010	003										329
300-309	016	027	022	025	027	015	013	012	017	008	004	004		004	001	002										197
310-319	016	017	023	015	013	008	006		002																	100
320-329	008	008	012	008	003	004																				43
330-339	005	006	005																							16
340-349	005	010	004	001	001																					21
350-359	005	006	001	001																						13
	209	338	263	245	243	149	133	125	138	91	94	82	52	59	58	32	19	22	12	14	10	8	4	1	0	2401

NUMBER OF ZERO RATES 261


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 100M 7000 107/73 18
SCALE
10 MILES
N
109
111
112
113
114
115
116
117
120
122
123
124

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 11 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 18 DAYS 7 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	7.3	.0	142.5	180.0
O1	10.0	.5	150.4	230.7
K1	23.1	1.5	149.2	228.4
OO1	1.1	-.3	126.5	266.0
M2	35.5	.4	152.6	235.4
S2	8.1	-.4	156.0	242.1
M4	2.9	-.8	138.3	340.4
MS4	2.1	-.4	141.8	27.5
M6	1.3	.5	173.0	296.7
M8	.8	.1	136.4	326.3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973

MAJOR COMPONENT	7	6	12	11	13	12	12	11	7	2
MINOR COMPONENT	0	-1	-3	0	-3	-2	-2	-1	0	0

APR. 28 1973

MAJOR COMPONENT	0	3	4	8	7	7	5
MINOR COMPONENT	-1	-2	-1	-1	-5	-4	-3

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

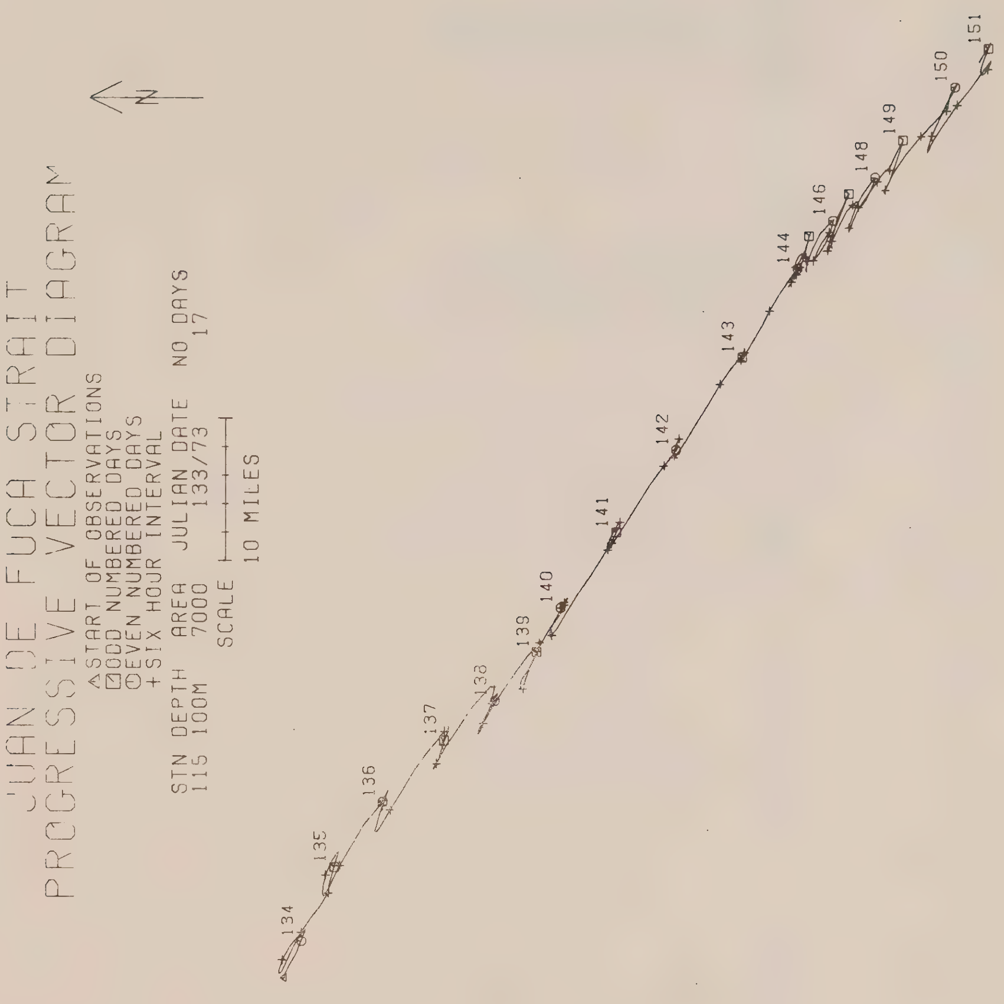
STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 18 DAYS

START OF RECORD 00 MN 21 HR 13 DY 05 MO 73 YR RATE OF OBSER.= 6 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	001																									1
10- 19	001	001	001																							3
20- 29	001	001																								2
30- 39		001																								1
40- 49	002		001																							3
50- 59			001																							1
60- 69	001	004																								5
70- 79	005	007	004	002																						18
80- 89	003	005	002	004	003																					17
90- 99	008	018	010	004	012	004	003	001																		60
100-109	011	034	025	024	022	014	024	021	018	006	005	004	002													210
110-119	014	019	026	022	023	022	027	025	033	016	015	016	004	007	013	007	001	003	002							295
120-129	012	026	026	012	025	026	016	017	018	015	024	014	023	029	032	033	034	025	015	005						427
130-139	006	013	011	020	013	013	015	008	005	004	007	004	007	008	007	003	001	004								149
140-149	004	005	005	005	004																					23
150-159	004	005	009	003																						21
160-169	005	003	002	002																						12
170-179		002	003	001	001																					7
180-189	001	002	002																							5
190-199	001	003	002																							6
200-209	001	003	001																							5
210-219	003	001	001																							5
220-229	003	004	002																							9
230-239	006	004	003																							13
240-249	004	004	002	002																						12
250-259	008	009	012	006	002	001																				38
260-269	005	006	007	006	008																					32
270-279	012	023	023	022	016	004	001	003	001																	105
280-289	011	022	023	030	015	013	012	019	012	005	006	001														169
290-299	022	028	031	024	025	029	024	018	030	028	025	006	002	008												300
300-309	009	013	020	020	013	011	010	005	006	011	006	002	001	001												128
310-319	008	018	011	006	005	005	005		006	002																66
320-329	007	005	004	002																						18
330-339	004	001	001	001																						7
340-349	004	001	002																							7
350-359	001																									1
	188	291	273	218	187	142	137	117	129	87	88	47	39	53	52	43	36	32	17	5	0	0	0	0	0	2181

NUMBER OF ZERO RATES 317


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 100M 7000 133/73 17
SCALE
10 MILES
N
134
135
136
137
138
139
140
141
142
143
144
146
148
149
150
151

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 23 HR 13 DAY 05 MON 73 YR

LENGTH OF DATA 17 DAYS 5 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	10.1	.0	142.7	180.0
O1	9.9	-.2	144.3	222.1
K1	25.0	1.6	148.2	232.1
OO1	2.0	.5	145.7	279.0
M2	34.3	-1.0	153.7	237.4
S2	5.7	-.2	143.3	251.9
M4	2.6	-.9	135.0	337.7
MS4	1.6	-.4	131.0	9.3
M6	.9	-.2	161.7	313.6
M8	.3	-.1	136.4	336.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAY 14 1973

MAJOR COMPONENT									
13	13	12	9	9	8	14	15	17	16
MINOR COMPONENT									
0	-2	-4	-4	-3	0	-3	-3	-3	-2

MAY 24 1973

MAJOR COMPONENT						
5	3	4	4	6	10	7
MINOR COMPONENT						
1	-2	0	-3	-1	-4	-2

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

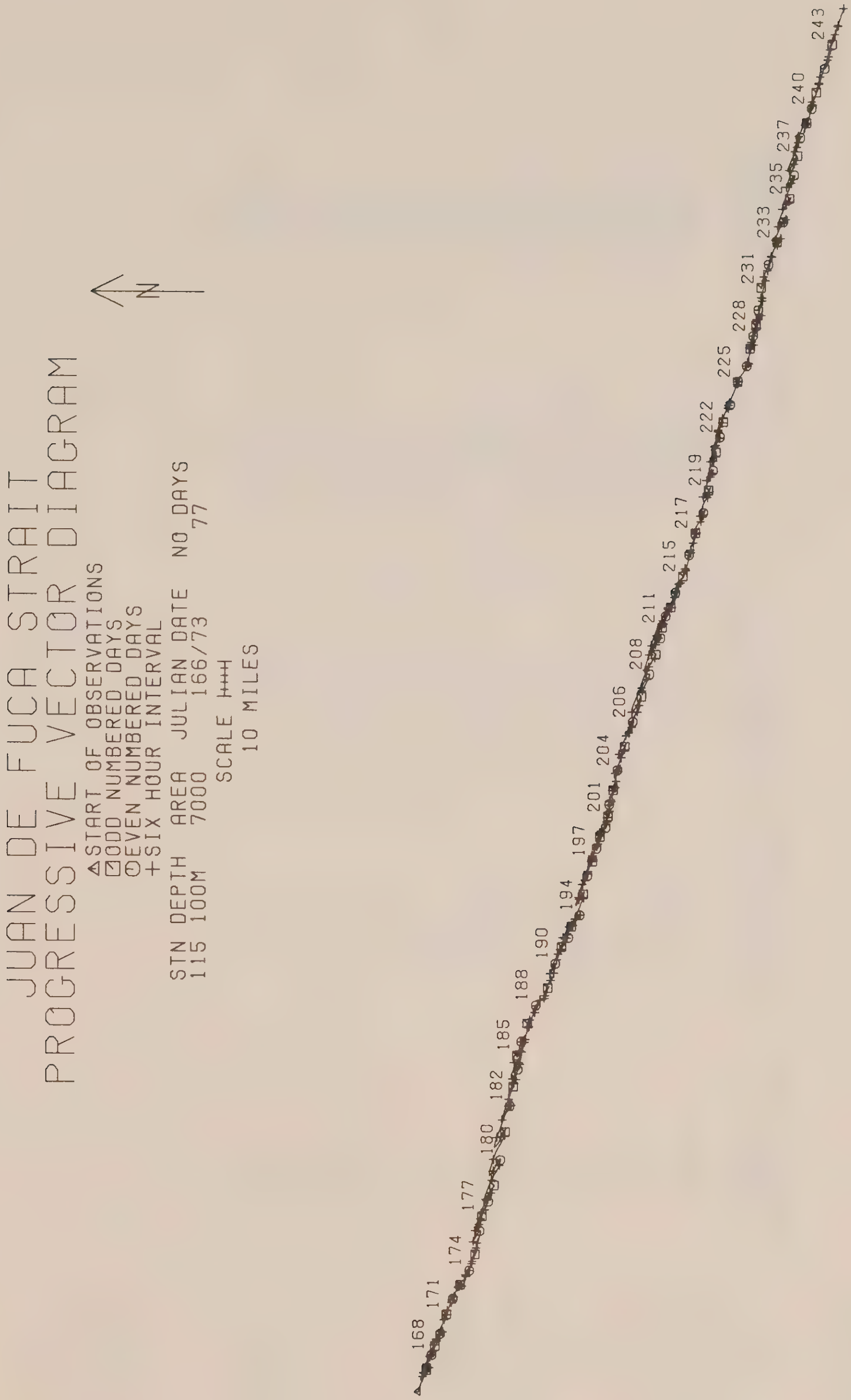
STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W LENGTH OF RECORD= 78 DAYS

START OF RECORD 30 MN 12 HR 15 DY 06 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	021	001	001																							23
10- 19	038	008																								46
20- 29	007	002																								9
30- 39	024	005																								29
40- 49	033	004																								37
50- 59	038	002	002																							42
60- 69	026	010																								36
70- 79	028	022																								50
80- 89	036	035	013	006	002																					92
90- 99	057	091	065	047	028	027	002	002	007																	326
100-109	045	117	195	184	177	154	168	121	084	029	028	009	005	002												1318
110-119	065	146	186	196	156	147	140	132	081	044	017	021	010	001												1342
120-129	059	133	115	066	047	028	020	023	020	008	004	001	001													525
130-139	054	072	043	015	003	003	001	004	002																	197
140-149	058	055	017	002																						132
150-159	044	028	007																							79
160-169	045	024																								69
170-179	025	009	001																							35
180-189	026	006																								32
190-199	027	008	001																							36
200-209	018	003	001																							22
210-219	026	004	001																							31
220-229	017	009	003																							29
230-239	022	013	001																							36
240-249	022	015	003	001																						41
250-259	019	036	008	003	002																					68
260-269	034	037	021	003	002	001	001																			99
270-279	026	049	049	047	014	005	002	001																		193
280-289	033	092	093	105	095	025	013	011	001																	468
290-299	047	103	116	147	168	066	035	022	006																	710
300-309	046	098	112	129	117	055	029	009	001																	596
310-319	061	081	073	050	025	011	003																			304
320-329	042	066	035	007	002	001																				153
330-339	048	031	006	001		001																				87
340-349	045	014	002																							61
350-359	046	012	003																							61
	1308	1441	1173	1009	838	524	414	325	202	81	49	31	16	3	0	0	0	0	0	0	0	0	0	0	0	7414

NUMBER OF ZERO RATES 8


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
115 100M 7000 166/73 77
SCALE
10 MILES
N
168
171
174
177
180
182
185
188
190
194
197
201
204
206
208
211
215
217
219
222
225
228
231
233
235
237
240
243

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 14 HR 15 DAY 06 MON 73 YR

LENGTH OF DATA 77 DAYS 3 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	11.2	.0	163.3	180.0
Q1	2.4	-.7	152.6	212.0
O1	13.0	-1.6	155.1	232.2
NO1	1.1	-.2	146.4	281.7
K1	27.1	-.5	154.2	258.1
J1	.8	-.4	149.6	305.7
OO1	1.5	.0	163.9	319.6
MU2	2.5	-.1	11.6	48.2
N2	10.7	.1	164.3	217.6
M2	41.7	.2	158.8	241.6
L2	1.1	-.2	4.5	261.4
S2	8.7	1.6	154.3	265.0
MN4	.7	-.2	46.4	75.9
M4	1.4	-.8	136.9	29.4
MS4	1.0	-.7	70.1	125.1
M6	.7	-.2	52.0	173.0
M8	.1	.1	39.4	226.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

JUNE 16 1973									
MAJOR COMPONENT									
10	6	8	13	10	10	10	10	14	9
MINOR COMPONENT									
1	1	0	2	1	-1	-1	1	3	3
JUNE 26 1973									
MAJOR COMPONENT									
9	10	15	16	16	12	12	8	9	12
MINOR COMPONENT									
0	1	3	5	4	3	2	4	1	1
JULY 6 1973									
MAJOR COMPONENT									
12	12	15	11	6	7	8	12	11	9
MINOR COMPONENT									
0	-2	2	1	-1	1	-1	3	3	1
JULY 16 1973									
MAJOR COMPONENT									
8	8	7	7	7	10	12	15	15	15
MINOR COMPONENT									
1	1	-1	2	2	2	3	2	2	2
JULY 26 1973									
MAJOR COMPONENT									
14	12	10	7	8	7	10	11	13	14
MINOR COMPONENT									
1	2	2	2	1	0	1	0	2	2
AUG. 5 1973									
MAJOR COMPONENT									
13	14	11	10	9	9	11	14	11	11
MINOR COMPONENT									
1	3	3	3	2	2	1	2	-1	3

DAILY RESIDUALS (CM/SEC/DAY)

STATION 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

AUG. 15 1973

MAJOR COMPONENT	8	7	10	14	15	15	13	14	13	11
MINOR COMPONENT	2	1	3	4	2	1	2	2	3	4

AUG. 25 1973

MAJOR COMPONENT	10	9	9	11	16	16
MINOR COMPONENT	3	0	1	2	1	3

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

STARTING TIME OF ANALYSED DATA 00 MIN 16 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 178 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	9.9	.0	155.7	180.0
MM	2.0	-.1	167.1	240.8
MSF	1.7	.3	144.8	296.1
MF	1.4	.4	141.8	336.8
2Q1	.5	-.5	49.2	315.5
Q1	1.9	-.4	151.1	219.2
O1	12.8	-.8	152.6	231.9
MP1	.8	-.1	91.2	66.8
NO1	1.8	.1	159.0	221.0
P1	6.3	-.4	146.2	241.6
K1	24.3	.7	152.7	247.1
PHI1	1.7	-1.1	132.2	205.9
J1	.7	.1	146.7	286.5
OO1	1.3	.1	159.6	304.3
MNS2	.9	-.5	174.3	220.7
MU2	.7	.6	168.4	164.0
N2	9.8	.0	158.2	218.2
M2	40.5	.2	156.7	240.6
L2	.8	-.3	2.1	93.6
S2	9.1	.3	152.1	256.5
K2	2.8	-.5	5.1	75.2
KJ2	.8	.0	129.4	284.8
2SM2	.3	.1	111.1	199.4
MO3	.8	-.6	26.0	275.2
M3	.6	.0	39.4	212.3
SO3	1.1	-.7	38.0	237.3
MK3	1.4	-1.3	128.2	185.8
SK3	.3	-.2	73.8	4.7
MN4	.5	-.3	46.9	264.4
M4	1.6	-.6	132.7	195.4
SN4	.5	-.2	137.9	22.2
MS4	.8	-.6	133.5	149.9
MK4	.6	-.1	105.4	61.6
S4	.2	.0	24.0	231.9
SK4	.3	.0	72.9	299.3
2MN6	.4	-.2	42.5	250.2

CONTINUED

TIDAL CURRENT ELLIPSE

STN 115 DEPTH 100 JUAN DE FUCA ST. 48 15.4 N 124 7.8 W

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
M6	.6	.0	30.8	254.6
MSN6	.3	-.1	74.8	293.8
2MS6	.6	-.3	137.9	347.3
2MK6	.6	.1	164.5	267.5
2SM6	.2	.0	139.4	10.5
MSK6	.2	.0	57.3	119.9
3MN8	.2	.0	9.3	115.6
M8	.3	.0	134.7	320.9
3MS8	.1	.0	70.1	299.5
M12	.2	.0	6.4	34.7

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W LENGTH OF RECORD= 42 DAYS

START OF RECORD 00 MN 16 HR 06 DY 03 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	011	004																								15
10- 19	016	006																								22
20- 29	017	005																								22
30- 39	007																									7
40- 49	010	003																								13
50- 59	018	006																								24
60- 69	021	011																								32
70- 79	024	011	003																							38
80- 89	025	029	011	003																						68
90- 99	031	045	040	018	011	005	001																			151
100-109	039	063	088	091	068	037	020	017	004	001	002															430
110-119	029	057	097	128	154	100	080	063	029	008	001															746
120-129	024	034	051	044	040	018	026	007	005	001																250
130-139	014	029	015	008	005				001																	72
140-149	016	016	005	001	001																					39
150-159	013	010	001		001																					25
160-169	012	002	001																							15
170-179	009	007	001																							17
180-189	011	005																								16
190-199	015	004																								19
200-209	013	001	001																							15
210-219	010	007																								17
220-229	012	003																								15
230-239	018	008	001																							27
240-249	010	017																								27
250-259	022	020	001																							43
260-269	013	017	003	001																						34
270-279	016	027	015	003	004																					65
280-289	021	042	036	022	018	007	006	005	004	002	006	001														170
290-299	019	041	068	059	060	058	043	047	022	020	006	007	005													455
300-309	028	063	084	083	086	108	047	045	025	016	003	004														592
310-319	019	065	053	032	038	021	012	007	004			001														252
320-329	021	053	022	018	011	005	002																			132
330-339	017	035	009		003																					64
340-349	028	019	003	001																						51
350-359	018	014	002																							34
		779		512		359		191		48		13		0		0		0		0		0		0		4014
	647		611		500		237		94		18		5		0		0		0		0		0		0	

NUMBER OF ZERO RATES 0

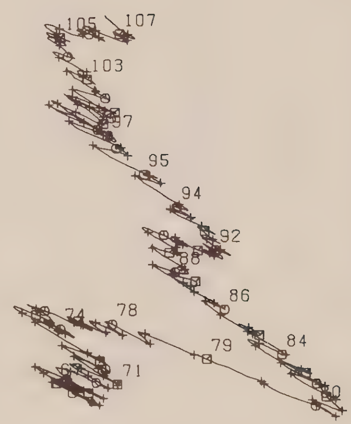
JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM

△ START OF OBSERVATIONS
⊡ ODD NUMBERED DAYS
⊙ EVEN NUMBERED DAYS
+ SIX HOUR INTERVAL

STN	DEPTH	AREA	JULIAN DATE	NO DAYS
116	015M	7000	65 /73	41

SCALE
10 MILES

N



TIDAL CURRENT ELLIPSE

STN 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 18 HR 06 DAY 03 MON 73 YR

LENGTH OF DATA 41 DAYS 15 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
MEAN	2.7	.0	85.0	.0
Q1	1.9	.0	157.8	222.2
O1	18.9	-1.3	152.4	249.3
NO1	.9	.4	145.9	259.1
K1	22.4	-1.4	152.4	260.3
J1	2.5	-.2	159.3	263.7
OO1	1.9	-.3	160.8	329.9
MU2	2.4	.0	153.9	96.5
N2	8.6	.2	155.3	227.6
M2	40.6	-.5	153.4	243.7
L2	1.9	.2	144.0	65.1
S2	14.0	-.1	154.0	258.2
MN4	1.1	-.1	122.3	56.3
M4	1.5	-.4	138.8	102.9
MS4	1.2	.1	152.6	157.2
M6	.8	.3	96.3	135.7
M8	.6	-.3	151.9	246.1

DAILY RESIDUALS (CM/SEC/DAY)

STATION 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

MAR. 7 1973									
MAJOR COMPONENT									
-5	2	7	1	6	-6	-3	-15	-9	2
MINOR COMPONENT									
1	2	-1	4	2	3	1	4	1	2
MAR. 17 1973									
MAJOR COMPONENT									
11	10	30	38	3	-4	-4	-10	-8	-13
MINOR COMPONENT									
2	4	2	1	3	3	2	2	3	2
MAR. 27 1973									
MAJOR COMPONENT									
-13	-8	-4	-5	12	5	-5	-10	-12	-10
MINOR COMPONENT									
4	0	5	4	0	2	4	3	5	4
APR. 6 1973									
MAJOR COMPONENT									
-4	-4	1	1	0	-5	-8	-8	-4	7
MINOR COMPONENT									
3	0	2	3	2	2	3	3	4	5
APR. 16 1973									
MAJOR COMPONENT									
9									
MINOR COMPONENT									
4									

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W LENGTH OF RECORD= 59 DAYS
START OF RECORD 15 MN 13 HR 17 DY 04 MO 73 YR RATE OF OBSER.= 4 PER HOUR

CMS/SEC

DIR	001 TO 009	010 TO 019	020 TO 029	030 TO 039	040 TO 049	050 TO 059	060 TO 069	070 TO 079	080 TO 089	090 TO 099	100 TO 109	110 TO 119	120 TO 129	130 TO 139	140 TO 149	150 TO 159	160 TO 169	170 TO 179	180 TO 189	190 TO 199	200 TO 209	210 TO 219	220 TO 229	230 TO 239	240 TO 249	
0- 9	016	020	001																							37
10- 19	020	006																								26
20- 29	017	009	001																							27
30- 39	009	006																								15
4C- 49	015	012																								27
50- 59	026	012																								38
60- 69	030	008																								38
70- 79	019	018	007	001																						45
80- 89	017	046	011	001																						75
90- 99	032	052	041	022	020	011	003	001		002																184
100-109	029	082	073	106	107	070	043	021	022	006	003	002	001													565
110-119	037	074	088	098	134	135	072	056	044	027	012	005	001	001												784
120-129	022	041	041	023	025	017	013	003	004	005	007		001	001												203
130-139	023	045	022	016	009	009	002		001																	127
140-149	023	030	015	004	002				001																	75
150-159	029	019	005	001																						54
160-169	017	013	001																							31
170-179	018	008	001																							27
180-189	013	011																								24
190-199	014	007																								21
200-209	014	010	001																							25
210-219	011	010																								21
220-229	014	006																								20
230-239	015	015	002																							32
240-249	010	026	001		001																					38
250-259	015	033	005																							53
260-269	021	038	019	005	001																					84
270-279	027	050	034	021	009	005	002	001																		149
280-289	024	072	049	059	045	026	019	008	013	002		001		002	001											321
290-299	018	072	093	089	084	068	068	067	044	044	018	018	014	010	006	003	004									720
300-309	036	083	129	107	112	079	076	076	077	061	039	020	006	009	006	004	001									921
310-319	019	071	081	061	038	024	019	023	013	012	003		001		001	001										367
320-329	018	060	043	022	010	001	003	003	001	001																162
330-339	022	047	021	005	004	003		001																		103
340-349	020	037	018	003																						78
350-359	023	020	007	004																						54
	733	1169	810	648	601	448	320	260	220	160	82	46	24	23	14	8	5	0	0	0	0	0	0	0	0	5571

NUMBER OF ZERO RATES 1


JUAN DE FUCA STRAIT
PROGRESSIVE VECTOR DIAGRAM
START OF ØBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
116 015M 7000 107/73 58
SCALE
10 MILES
N
164
163
162
159
155
152
149
141
146
136
123
122
121
120
116
113
111

TIDAL CURRENT ELLIPSE

STN 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W

STARTING TIME OF ANALYSED DATA 00 MIN 15 HR 17 DAY 04 MON 73 YR

LENGTH OF DATA 57 DAYS 21 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
MEAN	9.3	.0	136.0	.0
Q1	4.4	-.1	153.5	227.8
O1	21.7	-1.9	154.6	241.8
NO1	3.9	.3	158.2	255.7
K1	31.3	-1.5	154.2	249.1
J1	1.9	-.2	155.1	302.8
OO1	2.2	.3	150.3	341.6
MU2	3.6	-.5	140.2	164.8
N2	11.1	-.3	152.0	227.4
M2	43.4	-1.1	152.5	240.1
L2	.6	.1	172.2	130.3
S2	8.7	.3	156.1	243.6
MN4	.9	.0	114.6	19.0
M4	1.7	-1.1	128.5	105.2
MS4	1.4	-.2	158.1	129.4
M6	1.2	-.2	143.4	358.6
M8	.5	.2	130.1	103.4

DAILY RESIDUALS (CM/SEC/DAY)

STATION 116 DEPTH 015 JUAN DE FUCA ST. 48 14.2 N 124 8.6 W
MAJOR COMPONENT 115 MINOR COMPONENT 25 DEGREES

APR. 18 1973									
MAJOR COMPONENT									
-1	-13	-18	-15	-11	-13	-10	-6	2	0
MINOR COMPONENT									
1	3	6	4	2	4	1	2	3	0
APR. 28 1973									
MAJOR COMPONENT									
-17	-35	-30	-29	-25	-18	-6	-2	0	-3
MINOR COMPONENT									
2	5	5	8	6	6	4	4	2	2
MAY 8 1973									
MAJOR COMPONENT									
-6	6	5	10	-3	-6	-12	-13	-9	-9
MINOR COMPONENT									
2	1	1	1	4	2	-1	5	5	4
MAY 18 1973									
MAJOR COMPONENT									
-11	-17	-13	-8	-4	4	32	46	16	-15
MINOR COMPONENT									
3	2	1	2	3	2	2	3	2	1
MAY 28 1973									
MAJOR COMPONENT									
-32	-16	-5	-8	-12	-9	-13	-8	-5	-10
MINOR COMPONENT									
3	4	4	2	4	4	3	4	4	3
JUNE 7 1973									
MAJOR COMPONENT									
-19	-12	-6	-18	-29	-29	-22			
MINOR COMPONENT									
1	2	2	4	3	4	2			

DATA RECORD OF CURRENT OBSERVATIONS
VOLUME XVI

BEAUFORT SEA
1974 to 1976

W.S. Huggett, M.J. Woodward, A.N. Douglas

Canada.

INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY

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Sidney, B.C.

V8L 4B2

DATA RECORD OF CURRENT OBSERVATIONS

VOLUME XVI

BEAUFORT SEA

1974 to 1976

W.S. Huggett, M.J. Woodward, A.N. Douglas

Institute of Ocean Sciences, Patricia Bay

Sidney, B.C.

1977

ABSTRACT

Current meter data from the Southern Beaufort Sea for the years 1973, 1974 and 1975 are summarized. Co-tidal charts are presented of the constituents M_2 and K_1 for the tidal streams and tides. Temperature and salinity measurements coincident with the current observations are also shown.

INDEX

1. Introduction

The data presented in this report were collected as part of the baseline environmental studies known as the Beaufort Sea Project. A summary of the data and a description of the bottom currents over the continental shelf at the mouth of the Mackenzie River are contained in Huggett, W.S. et al, 1975, Near Bottom Currents and Offshore Tides, Technical Report No. 16, Beaufort Sea Project, Victoria.

2. Instrument Deployment

The moorings were deployed at three different times, October 1973, May 1974 and April 1975. In October 1973 three current meters and two pressure gauges were moored in Stations 12, 13 and 14 (Fig. 1). Stations 13 and 14 had both a tide gauge and current meter while Station 12 had a current meter only. These moorings were lowered from a helicopter through leads in the ice into about 40 m of water. Due to the heavy ice prevalent throughout the summer of 1974, only Station 13 became ice free and then only the pressure gauge was recovered. The other stations were searched for in 1975 but without success.

In May 1974 ten moorings, each consisting of a tide gauge and current meter (Fig. 2), were moored in Stations 1, 3 - 11 (Fig. 1). These moorings were put down through holes in the ice that had been blasted out by drilling five holes (in the shape of a dice 5) and then setting off ten pounds of Geogel in the centre hole. Again, due to the heavy ice present that year, only one station became ice free, Station 4. Both the current meter and pressure gauge were recovered. However, in 1977 the current meter and tide gauge of Station 11 were recovered.

In April 1975, a further eight moorings were deployed in Stations 3, 5, 8 - 11, 13 and 15 (Fig. 1). All the moorings consisted of a current meter and pressure gauge (Fig. 2). The ice cover this year had far more leads and patches of open water than the previous year, making it possible to lay the moorings by allowing them to free fall to the bottom after being lowered into the water from a helicopter. All stations were recovered except Station 3, and of the 14 instruments recovered only one pressure gauge failed to work. After picking up these instrument arrays during the first week in August, three were relaid in Stations 3, 5 and 13. All three moorings had a current meter and pressure gauge (Fig. 3), and were moored from the M.V. Theta, the vessel used to recover the moorings. Stations 5 and 13 were recovered in the early part of September, but Station 3 was covered in ten-tenths ice and so was again not recovered.

In August 1976, the mooring in Station 3 was recovered from the M. V. Nahidik. It is believed that the anchor must have either been turned upside-down by the ice or have landed on the steep slope of a

scour caused by ice, as the mooring did not come to the surface when released. The ship's anchor chain was used to knock the mooring loose, and in so doing the pressure gauge was lost.

3. Instruments

The current meters were all Aanderaa RCM 4 meters equipped to record either temperature, pressure or conductivity, or some combination of these three, as well as current speed and direction. The offshore pressure gauges used in 1974 and 1975 were all Aanderaa TG1A or TG2A meters, and in 1973 two University of British Columbia (U.B.C.) pressure gauges were used. All of the above instruments were set to record every half hour on magnetic tape with the exception of the two U.B.C. pressure gauges, which recorded every 5 minutes.

The acoustic releases used were Interocean models 1000-R and 1002-R in 1973 and 1975, and AMF model 395 in 1974.

4. Results

The tidal streams on the shelf about 3 m off the bottom are very small, in the order of 2 - 3 cm sec^{-1} and are predominantly semi-diurnal. M_2 is the dominant constituent with the largest recorded amplitude of 2.2 cm sec^{-1} at Station 13. Off the northern end of Baillie Island the amplitude of M_2 drops to 0.7 cm sec^{-1} while the amplitude of K_1 increases to 1.0 cm sec^{-1} from an average of 0.3 cm sec^{-1} on the shelf. The streams, therefore, become quite diurnal off the northern part of Baillie Island (Figs. 4, 5, 6 and 7). At Station 11 in 1974 the current meter was deployed at mid-depth and the tidal energy present at this depth (25 m) is far greater than that near the bottom (50 m). The amplitude of M_2 is 7.4 cm sec^{-1} and that of K_1 is 6.6 cm sec^{-1}, the streams remaining slightly semi-diurnal ($M_2/K_1 = 1.12$). Where on the bottom the current ran at all times between 10°and 70°, at mid-depth it ran from 0° - 110° for only 72% of the time, though between 270° through north to 110° it ran for 94% of the time. The residual current is of the same order as that near the bottom, 6.2 cm sec^{-1}, the direction is only 29°T compared with the 50°T at Station 11 and 55°T at Station 10.

The phase angle of the main tidal stream constituent, M_2 appears to be out of phase with the phase of the tidal constituent M_2. In the latter case the tide appears to advance across the shelf from west to east, whereas in the former case the tidal streams advance from east to west. Why this is so is not yet fully understood.

The residual currents along the shelf vary from 0.4 cm sec^{-1} at those stations in close proximity to the Mackenzie River delta to 8.2 cm sec^{-1} for those stations on the edge of the shelf (Fig. 8). During periods of storm activity in the Beaufort Sea, the currents attain speeds of 20 cm sec^{-1} or greater regardless of whether there is ice cover or not.

Plots of rotary spectral amplitudes have been included for the first time in this report series. These are calculated using the convention established by Mooers.† Record lengths consisting of a number of records equal to some power of two were used in computing the raw Fourier amplitudes and phases. No averaging has been performed so that confidence limits must be estimated directly from the plots.

† Mooers, Christopher N.K., 1973. A technique for the cross spectrum analysis of pairs of complex-valued time series, with emphasis on properties of polarized components and rotational invariants, Deep Sea Research, Volume 20, pp 1129 - 1141.

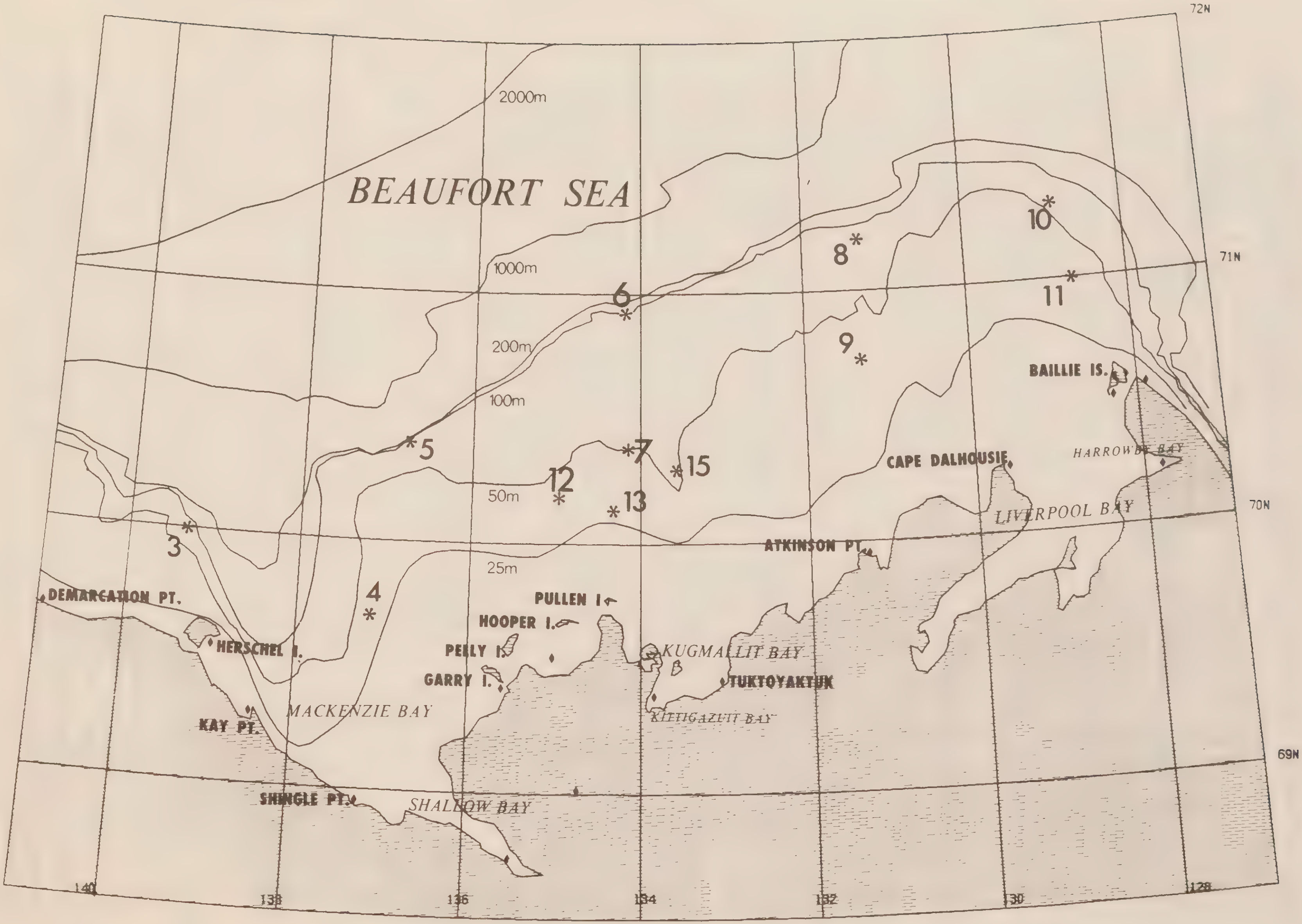


Figure 1. Position of stations in Beaufort Sea (✱) and deployment of tide gauges along the coast (◆).

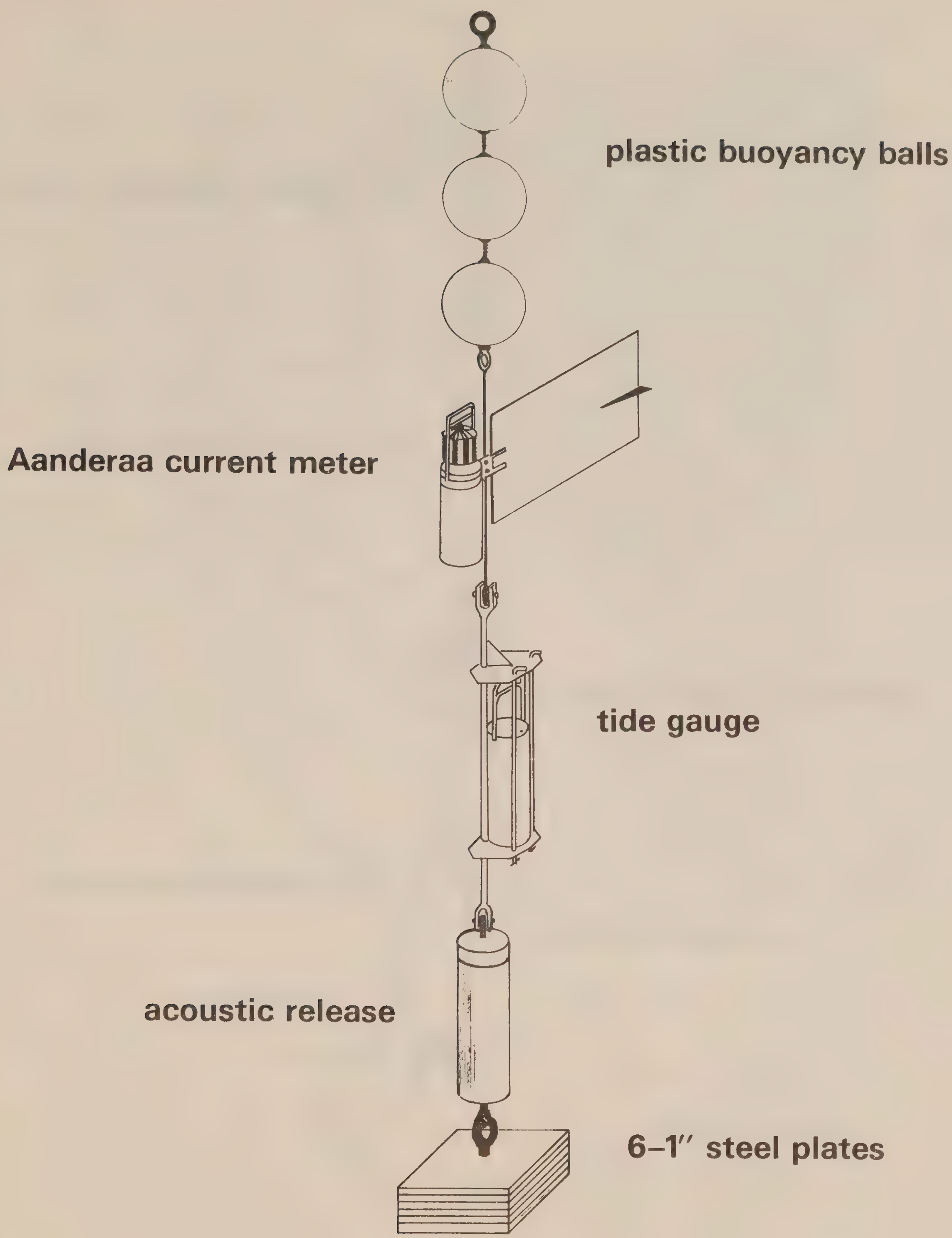


Figure 2. Anchoring system used in the Beaufort Sea under ice cover. (Unit moored on bottom by lowering through hole in ice.)

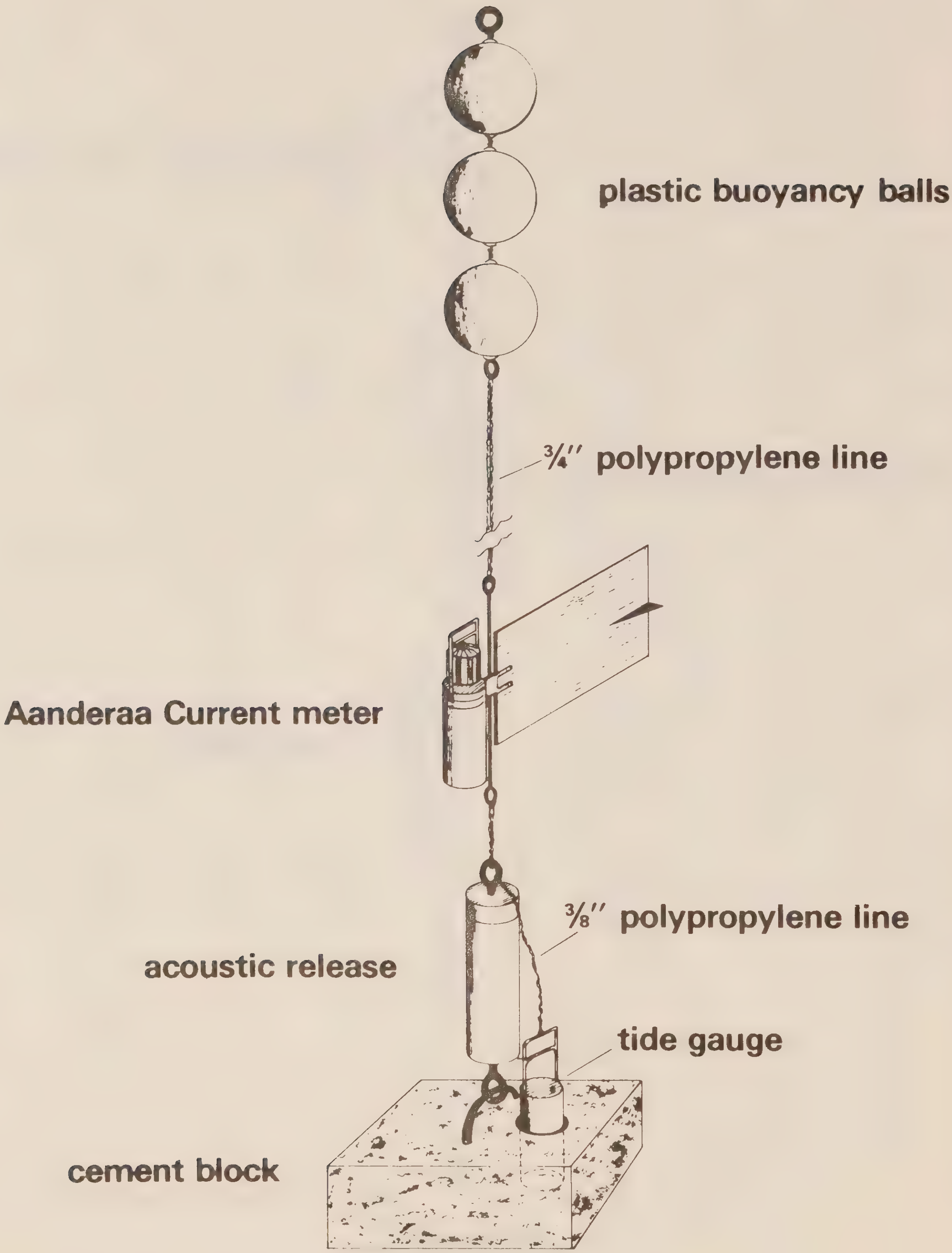


Figure 3. Anchoring system used in the Beaufort Sea when ice free.

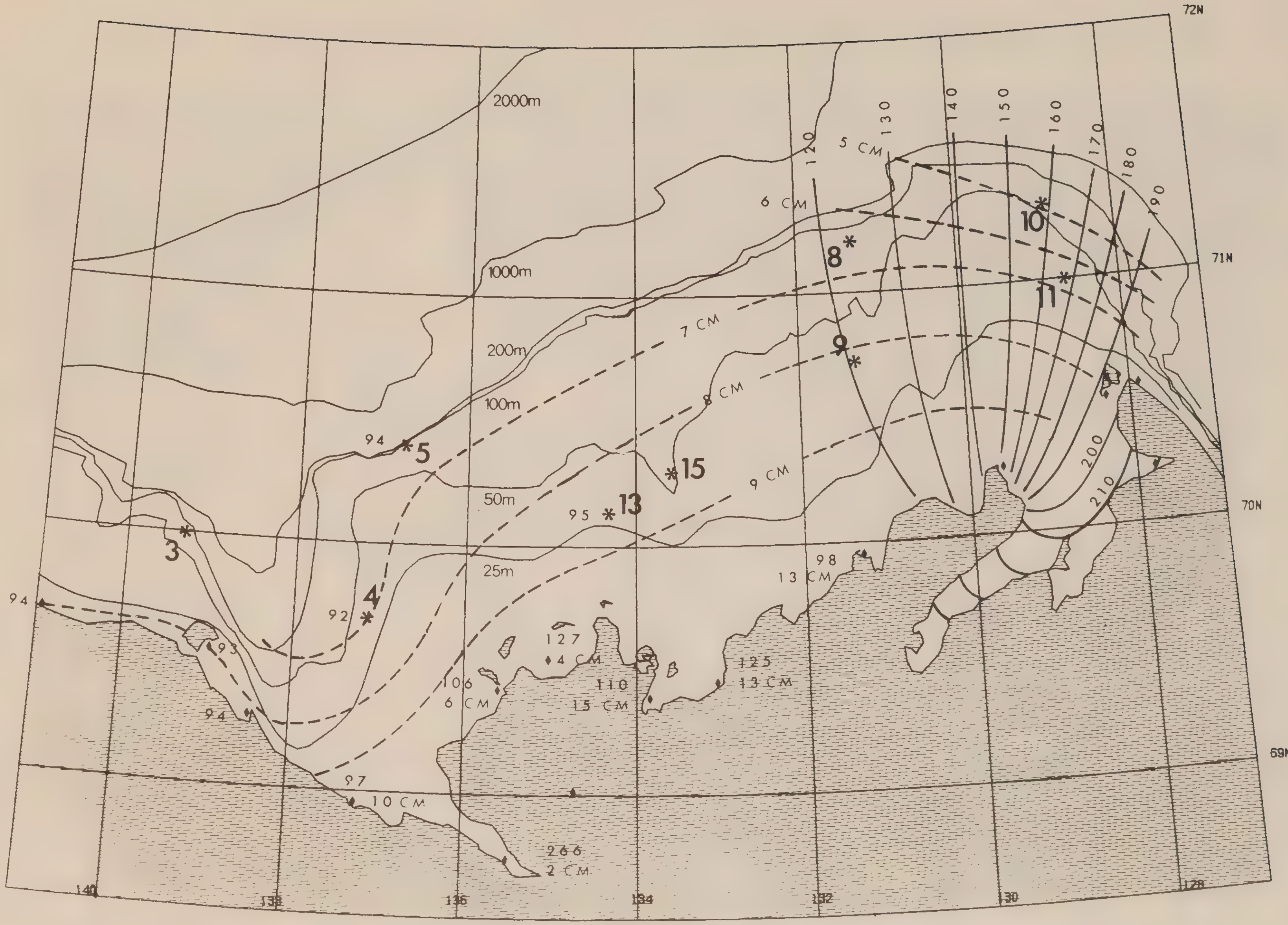


Figure 4. Co-phase and co-amplitude lines for the semi-diurnal tidal constituent M_2. Amplitudes are in cm. Phases are computed for Z + 6.

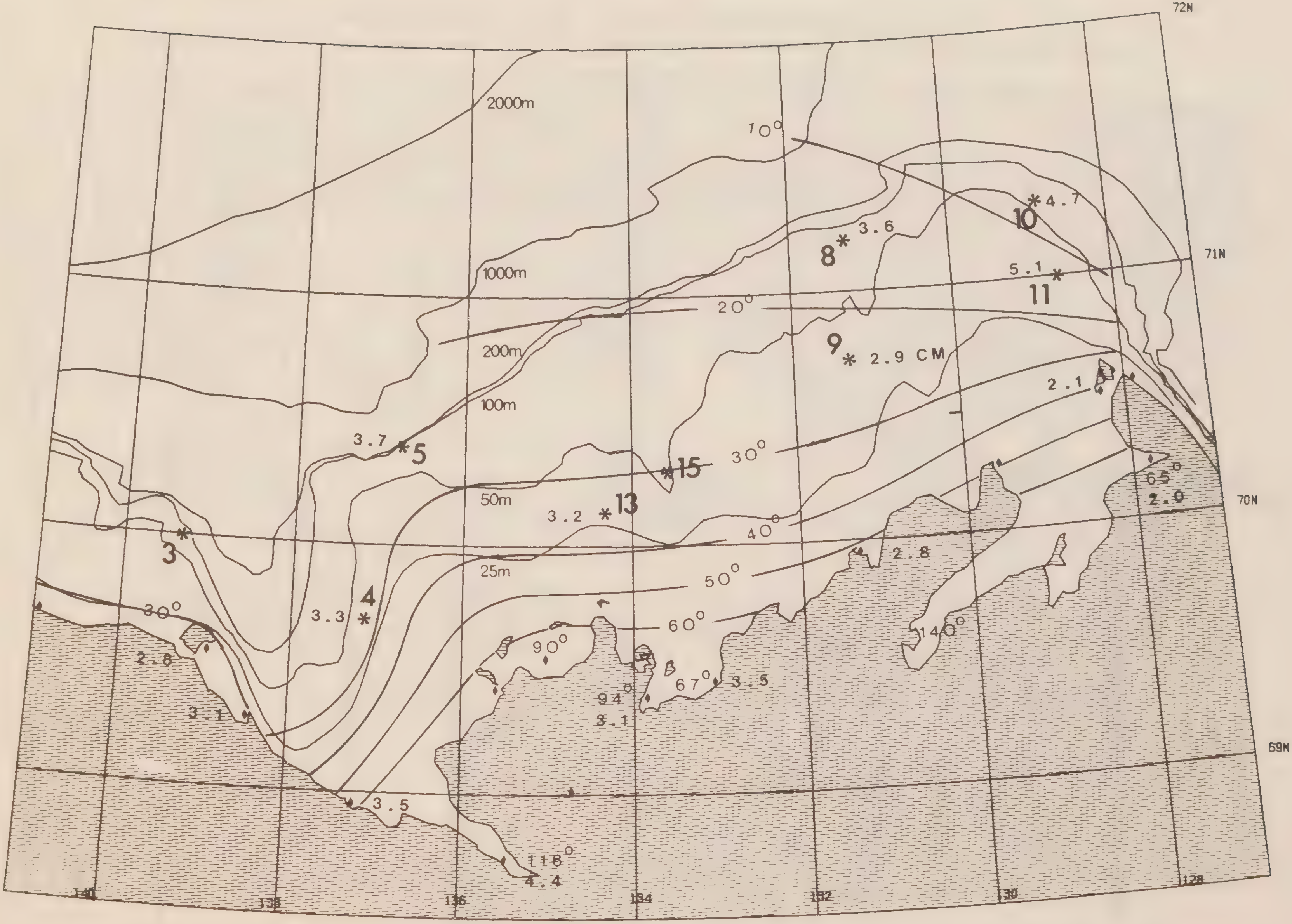


Figure 5. Co-phase lines and amplitude for the diurnal tidal constituent K_1. Amplitudes are in cm. Phases are computed for Z + 6.

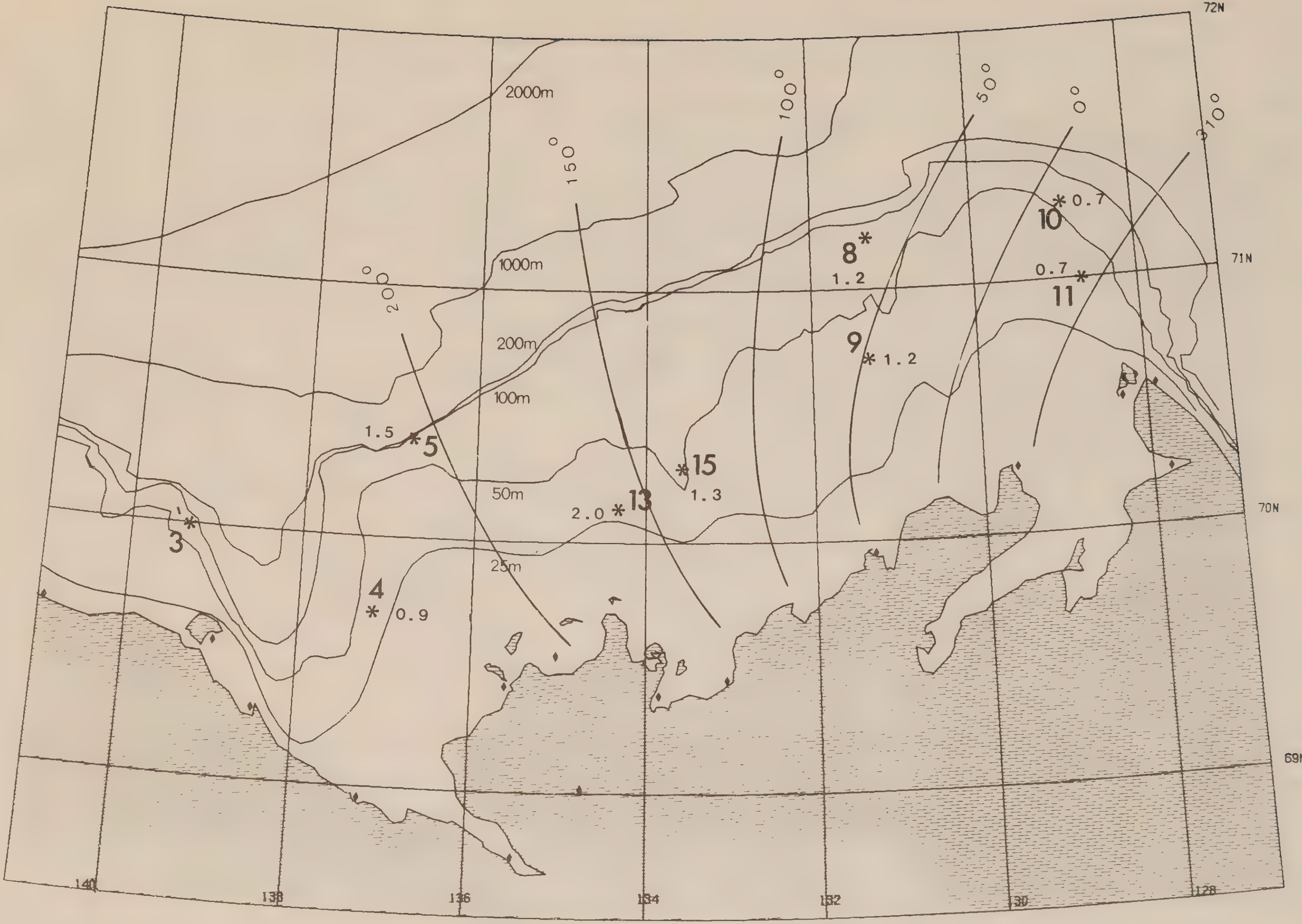


Figure 6. Co-phase lines and speed of the tidal stream semi-diurnal, constituent M_2. Speeds are in cm sec^{-1}. Phases are computed for Z + 6.

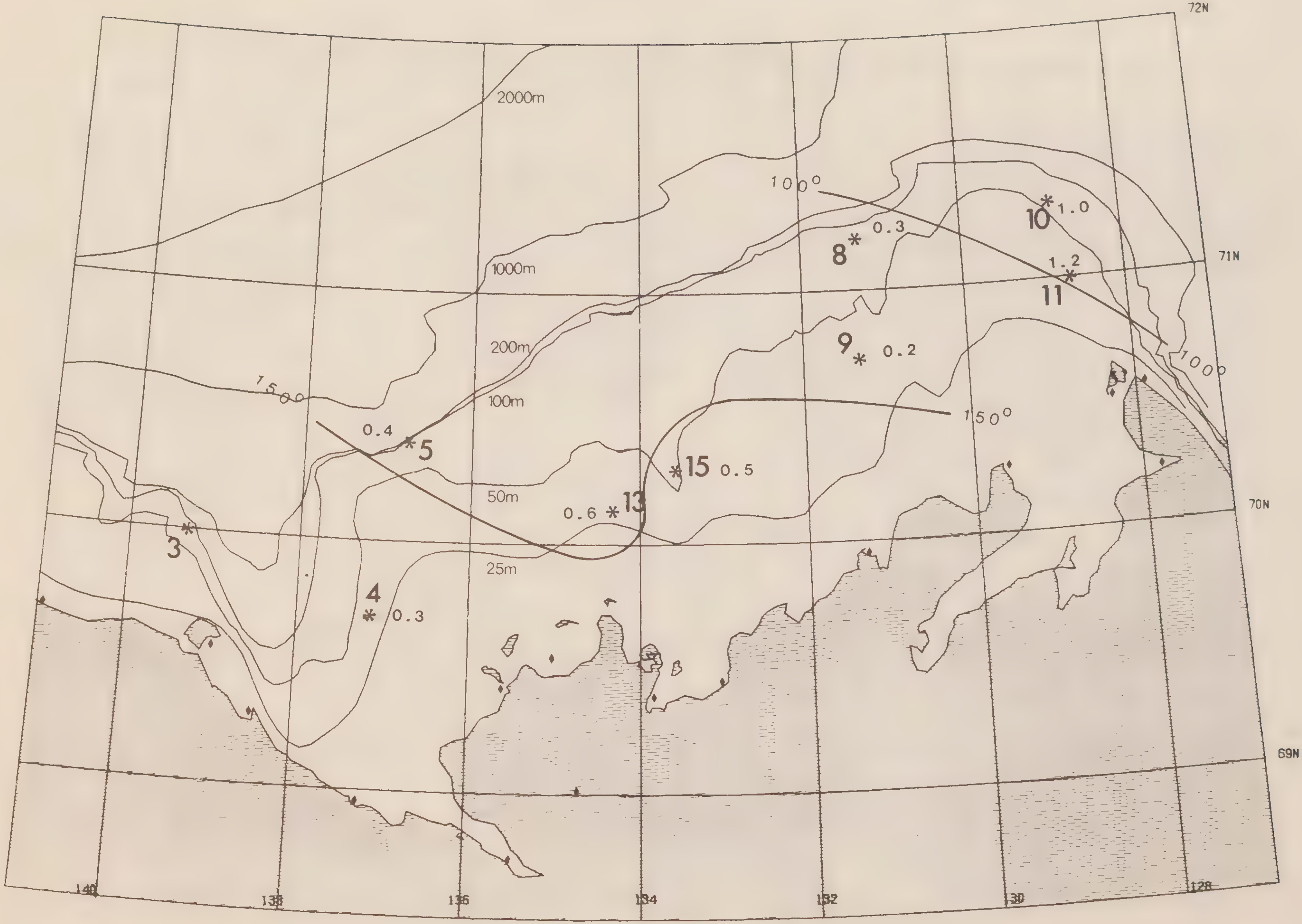


Figure 7. Co-phase lines and speed of the tidal stream diurnal constituent K_1. Speeds are in cm sec^{-1}. Phases are computed for Z + 6.

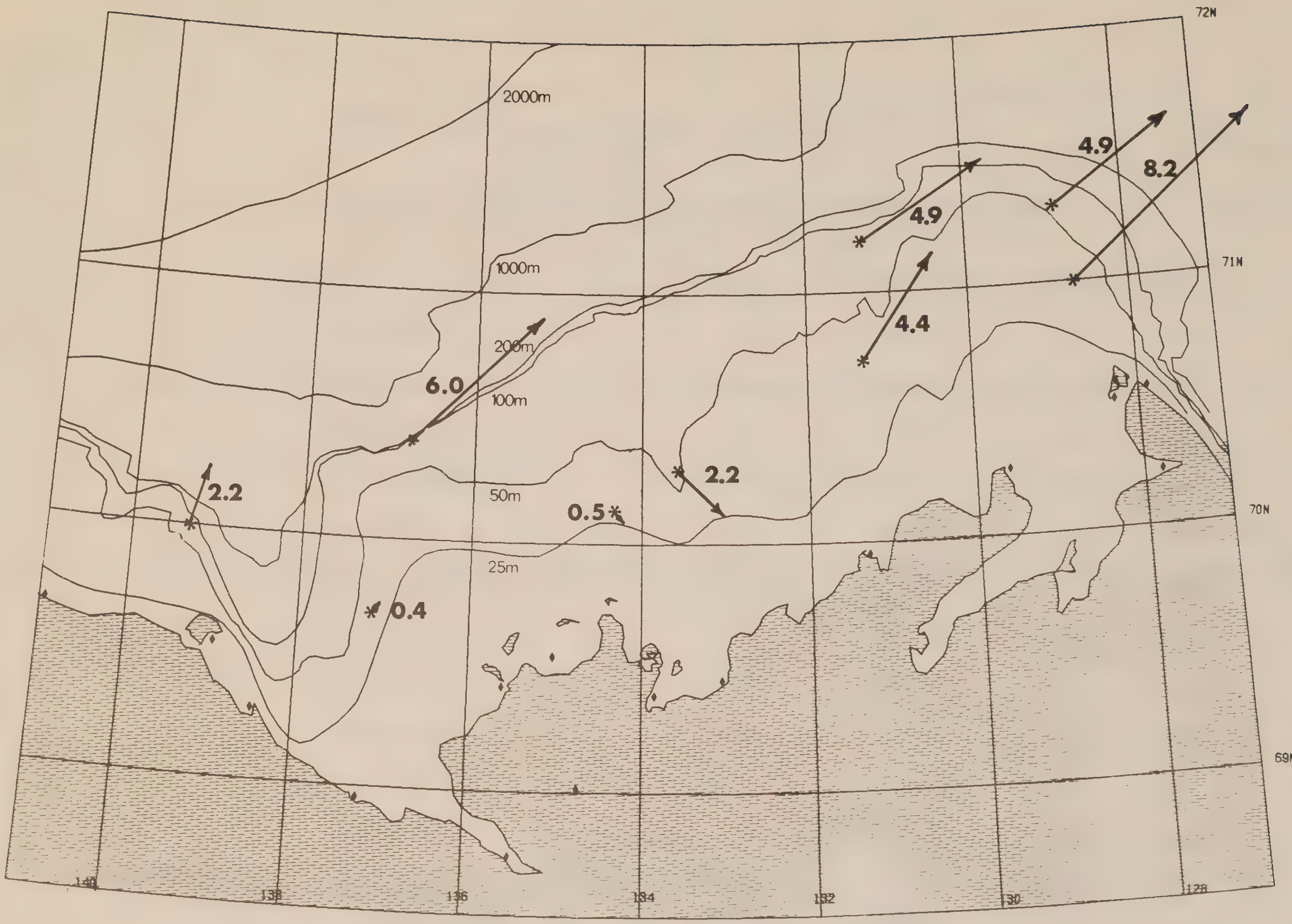
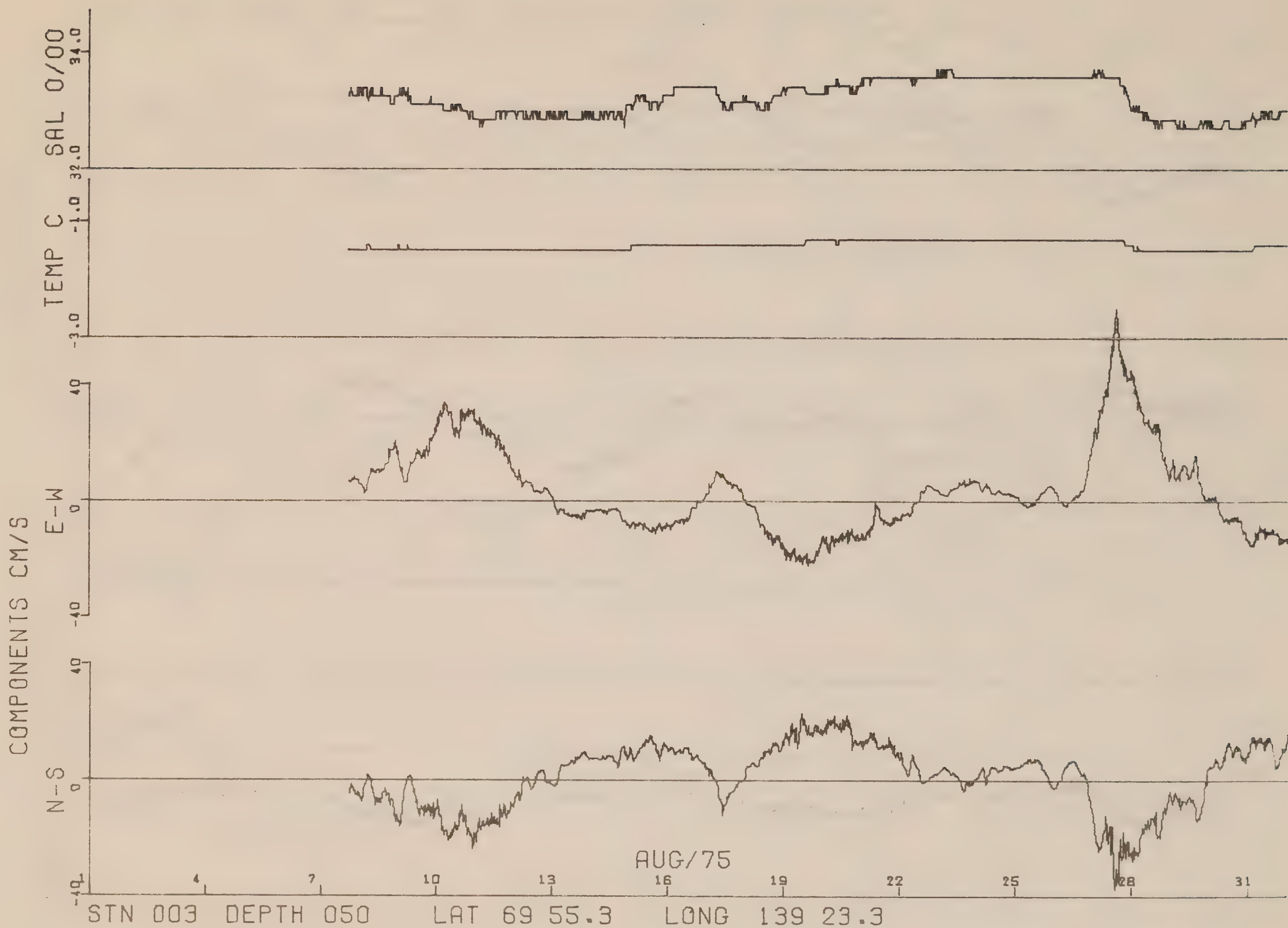


Figure 8. The residual current velocity 1975.

Station	Date	R.M.S. Speed cm/sec	Maximum Speed cm/sec	Average Velocity cm/sec	^{o}T
4	9/5-30/6 74	3.6	23.1	2.4	143
3	7/8-28/2 75	15.3	75.7	2.3	013
5	29/4-2/8 75	8.0	23.1	6.0	047
5	3/8-10/9 75	13.8	40.9	8.3	051
8	26/4-4/8 75	6.2	16.3	4.9	032
9	26/4-5/8 75	6.0	21.0	4.4	054
10	25/4-4/8 75	5.8	16.4	4.9	035
11	25/4-4/8 75	9.9	38.1	8.2	040
13	26/4-29/7 75	5.6	20.2	0.5	159
13	6/8-8/9 75	6.4	23.8	0.9	110
15	28/4-5/8 75	7.5	21.6	2.2	134

Table 1. RMS speed, maximum speed and average velocity at each station. Direction of average velocity is in degrees true.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TEMP C
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-3.0
COMPONENTS CM/S
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0
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N-S
40
0
-40
AUG/75
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16
19
22
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28
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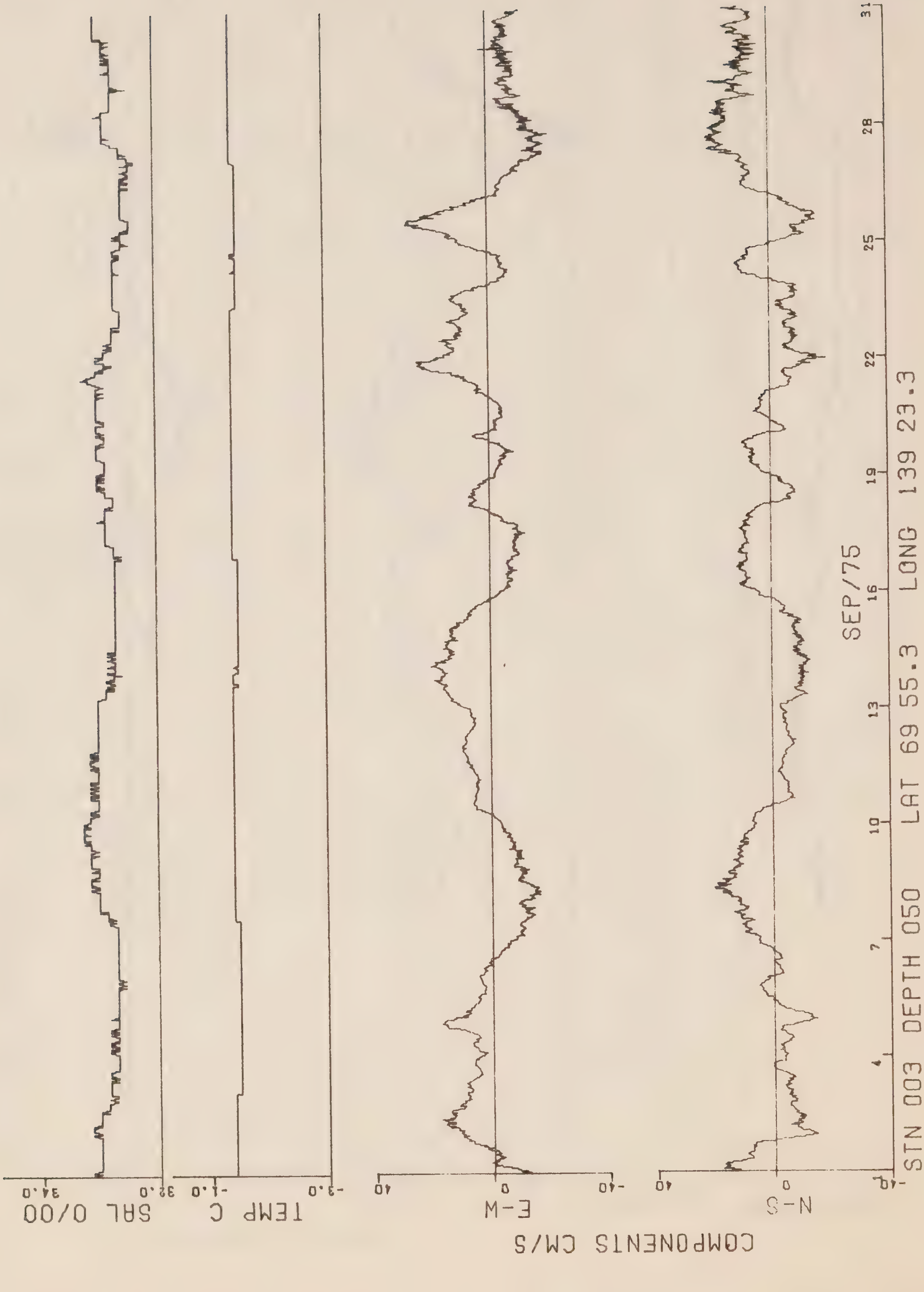
STN 003 DEPTH 050 LAT 69 55.3 LONG 139 23.3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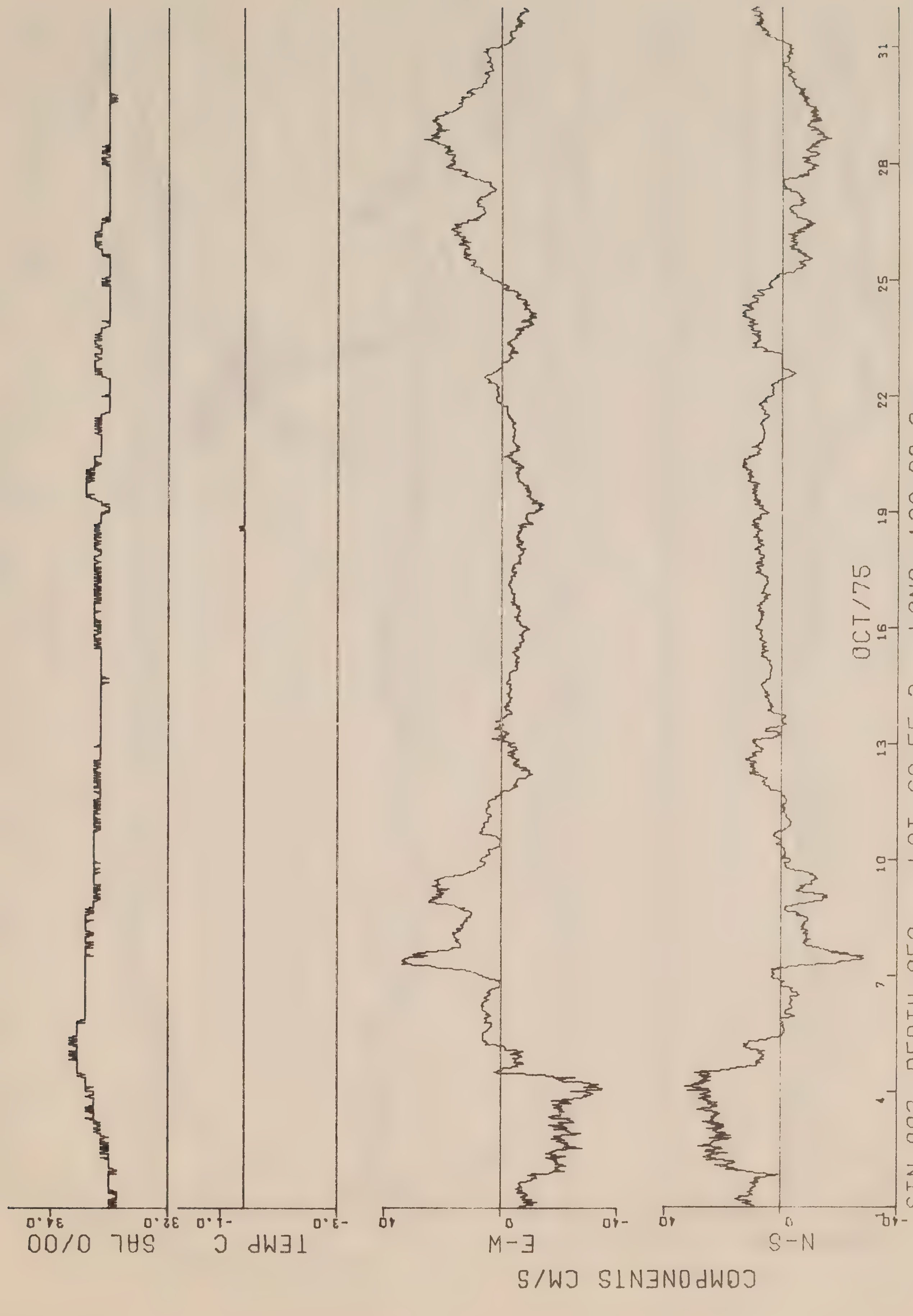
TEMP C
E-W
N-S
COMPONENTS CM/S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E-W
N-S
10
0
-10
COMPONENTS CM/S
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10
13
16
19
22
25
28
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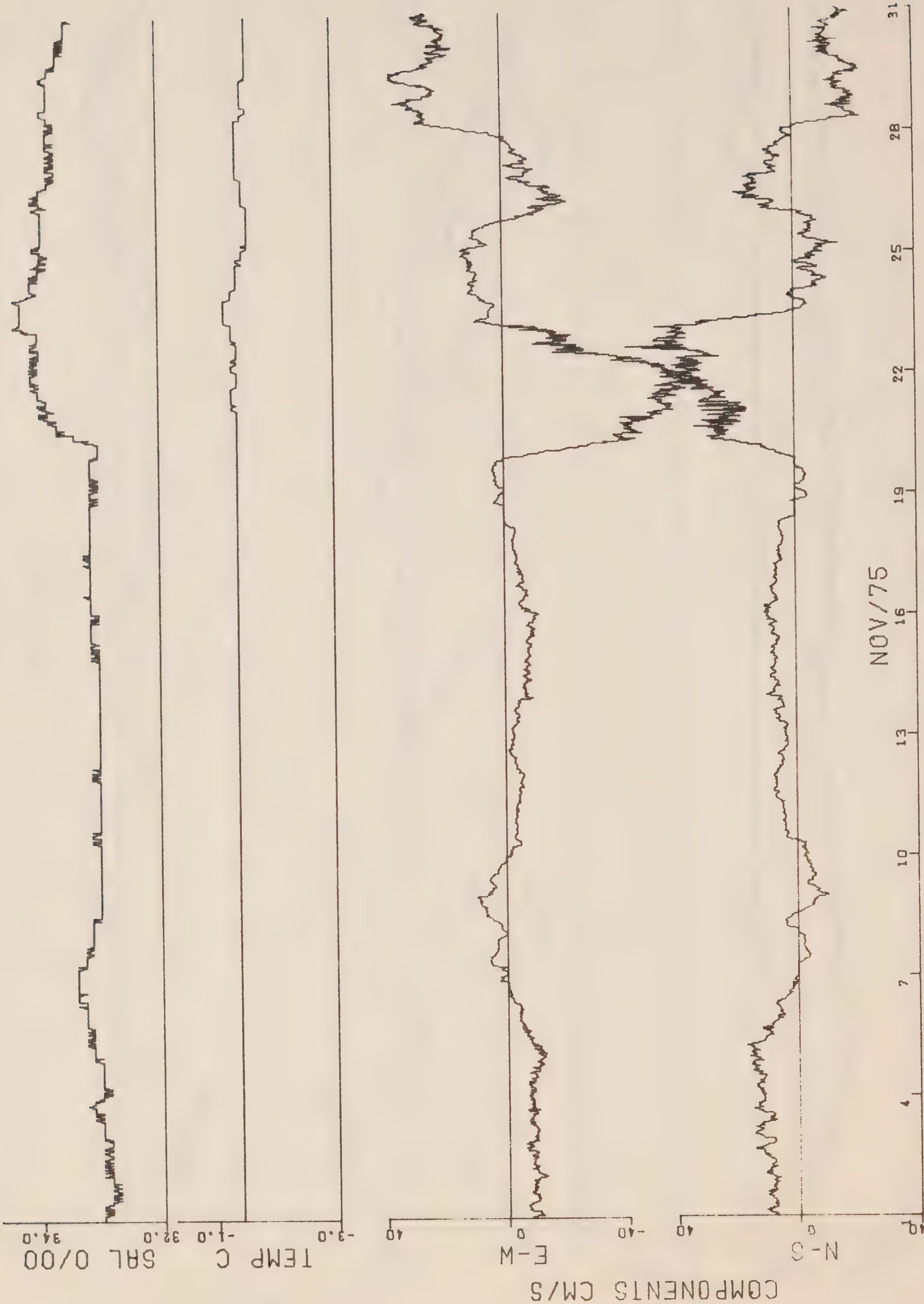

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NOV/75
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E-W
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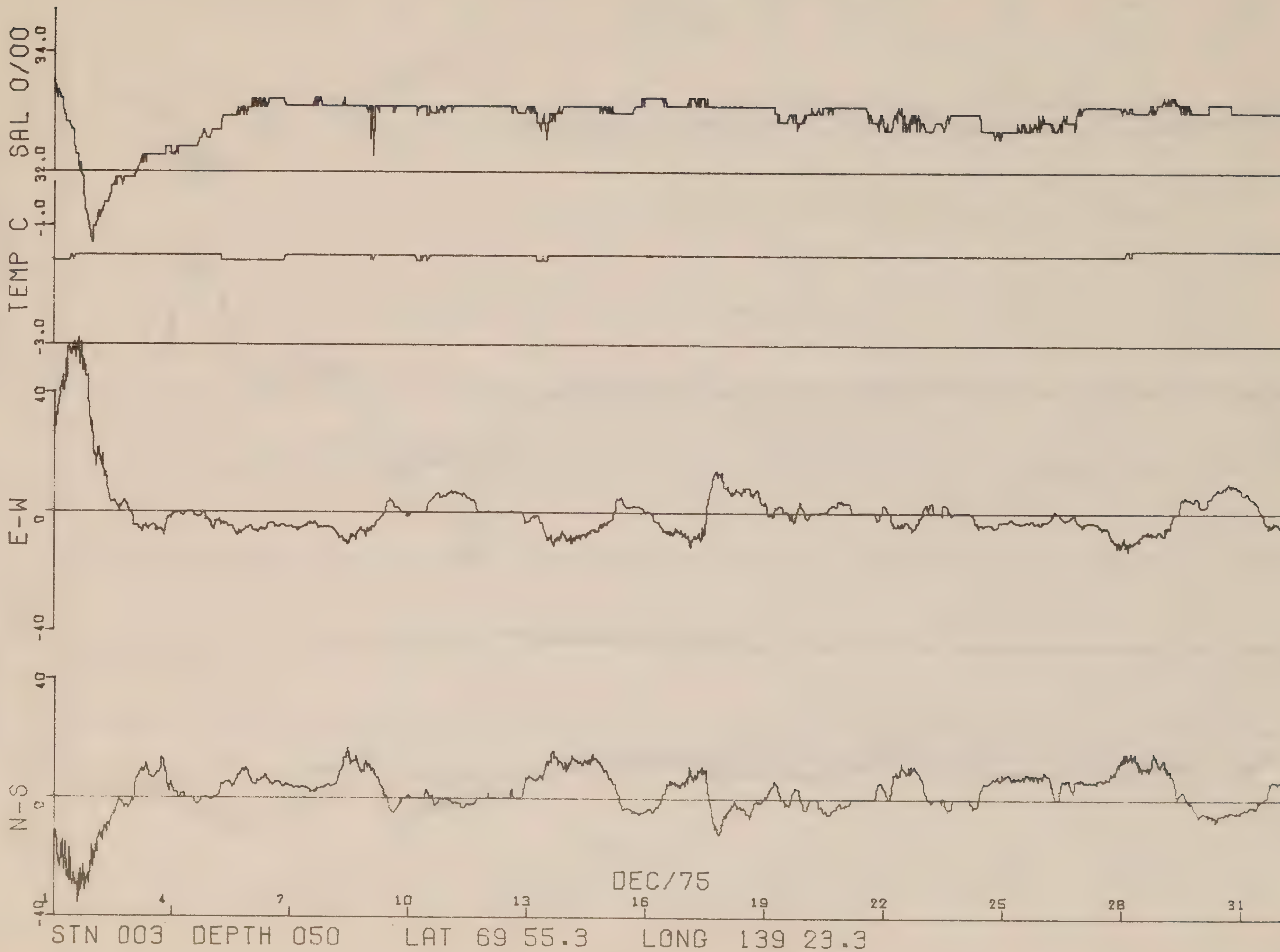
N-S
40 0 -40
COMPONENTS CM/S



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N-S
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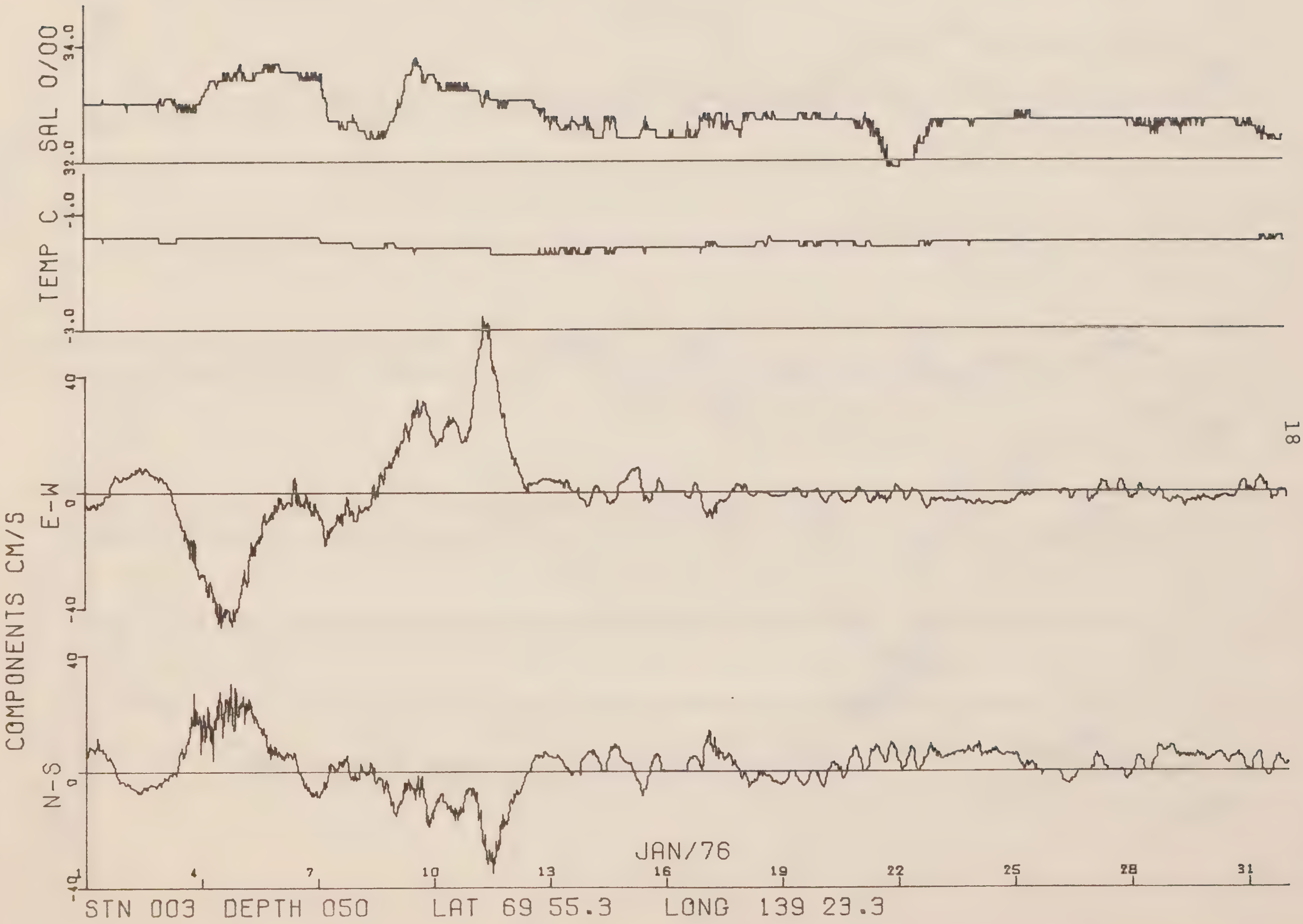

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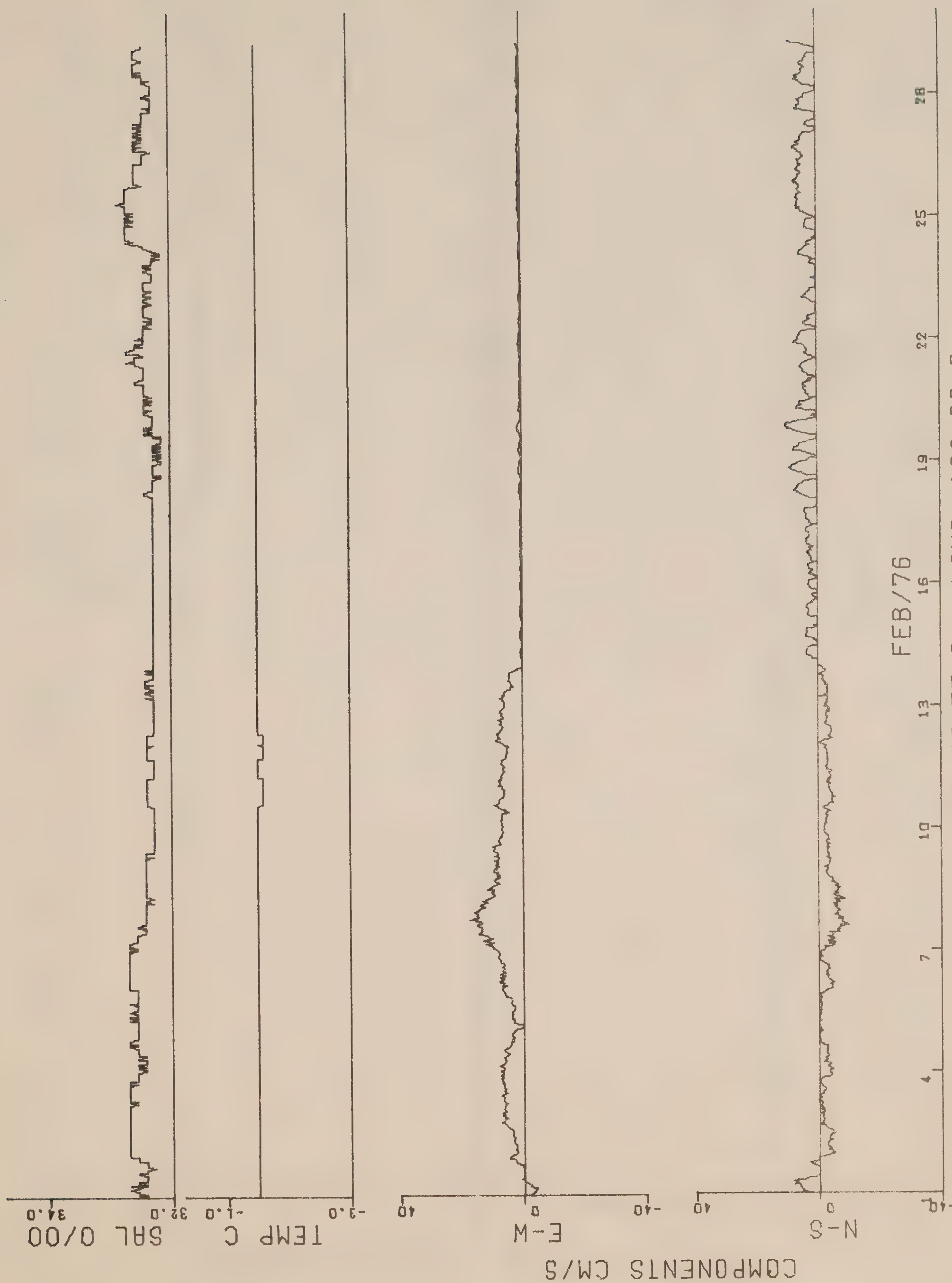
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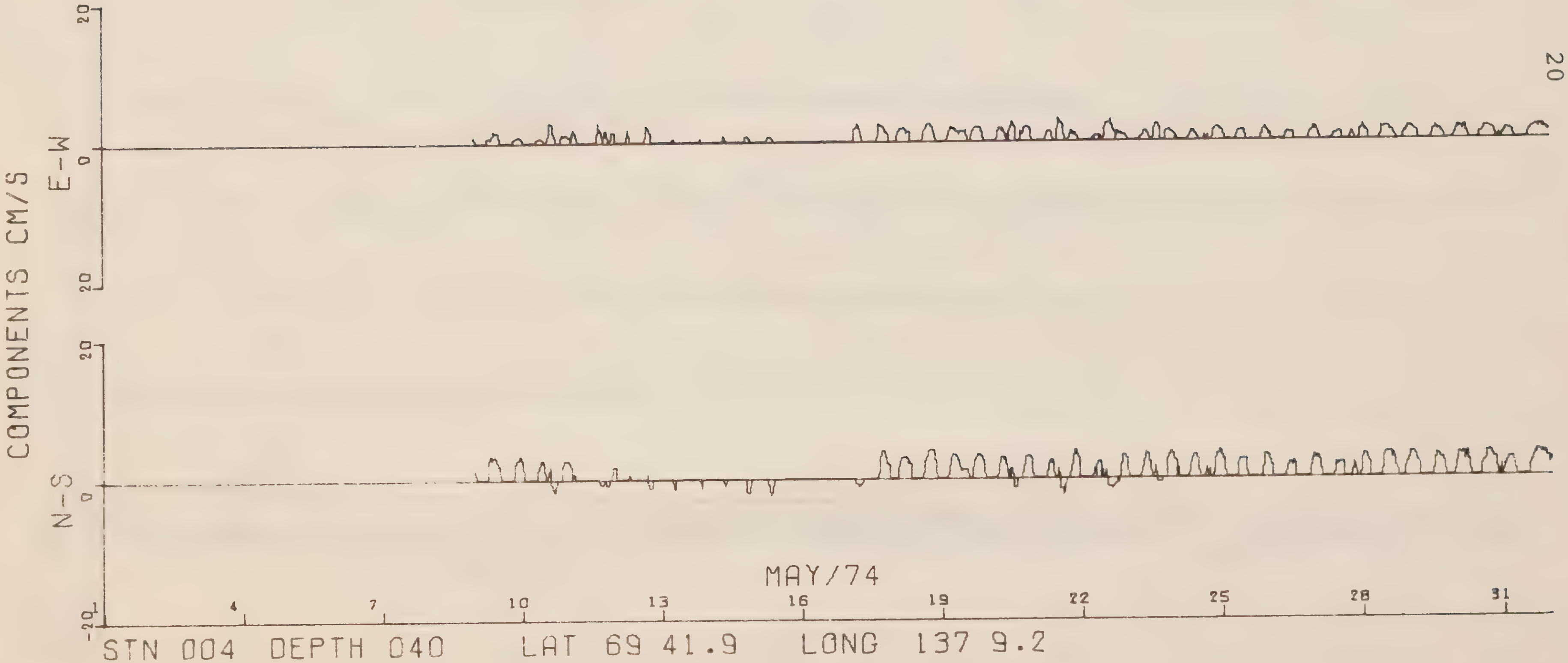
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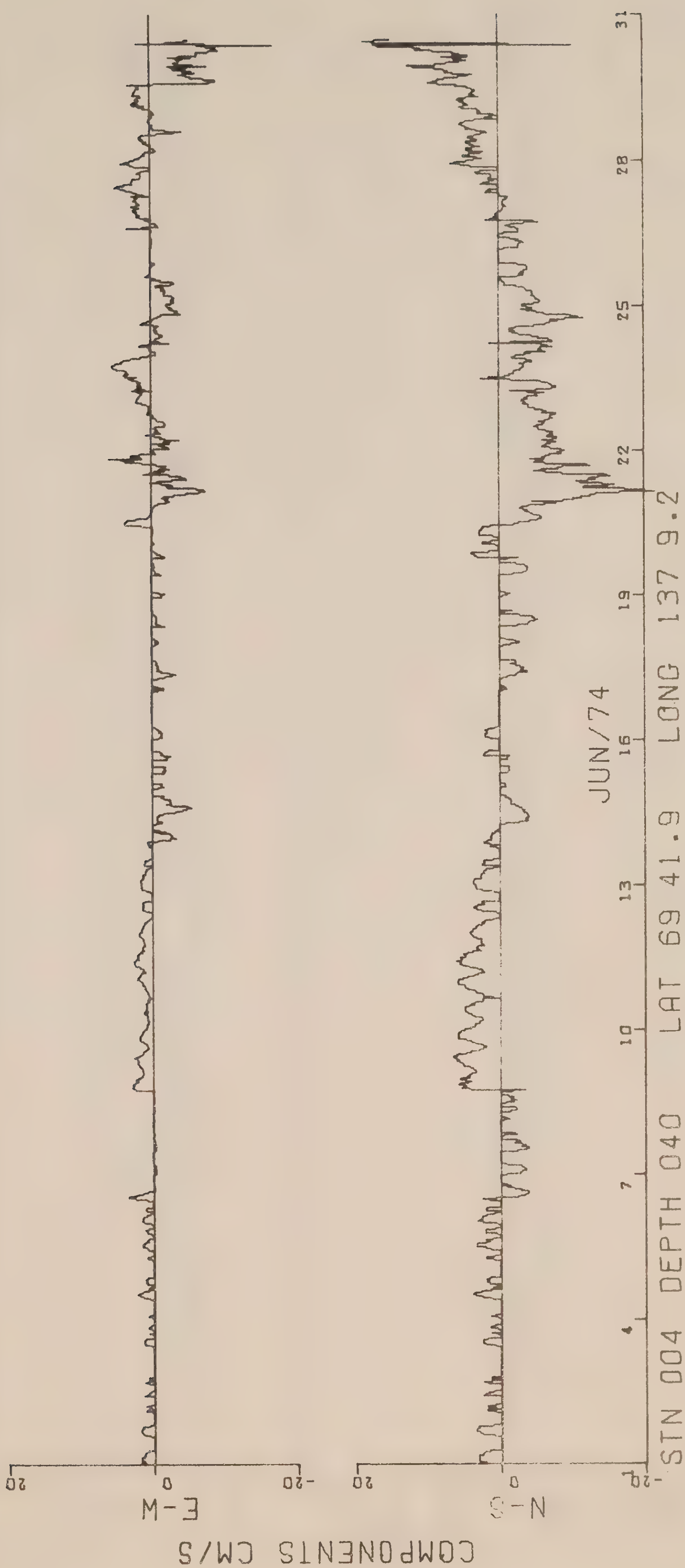
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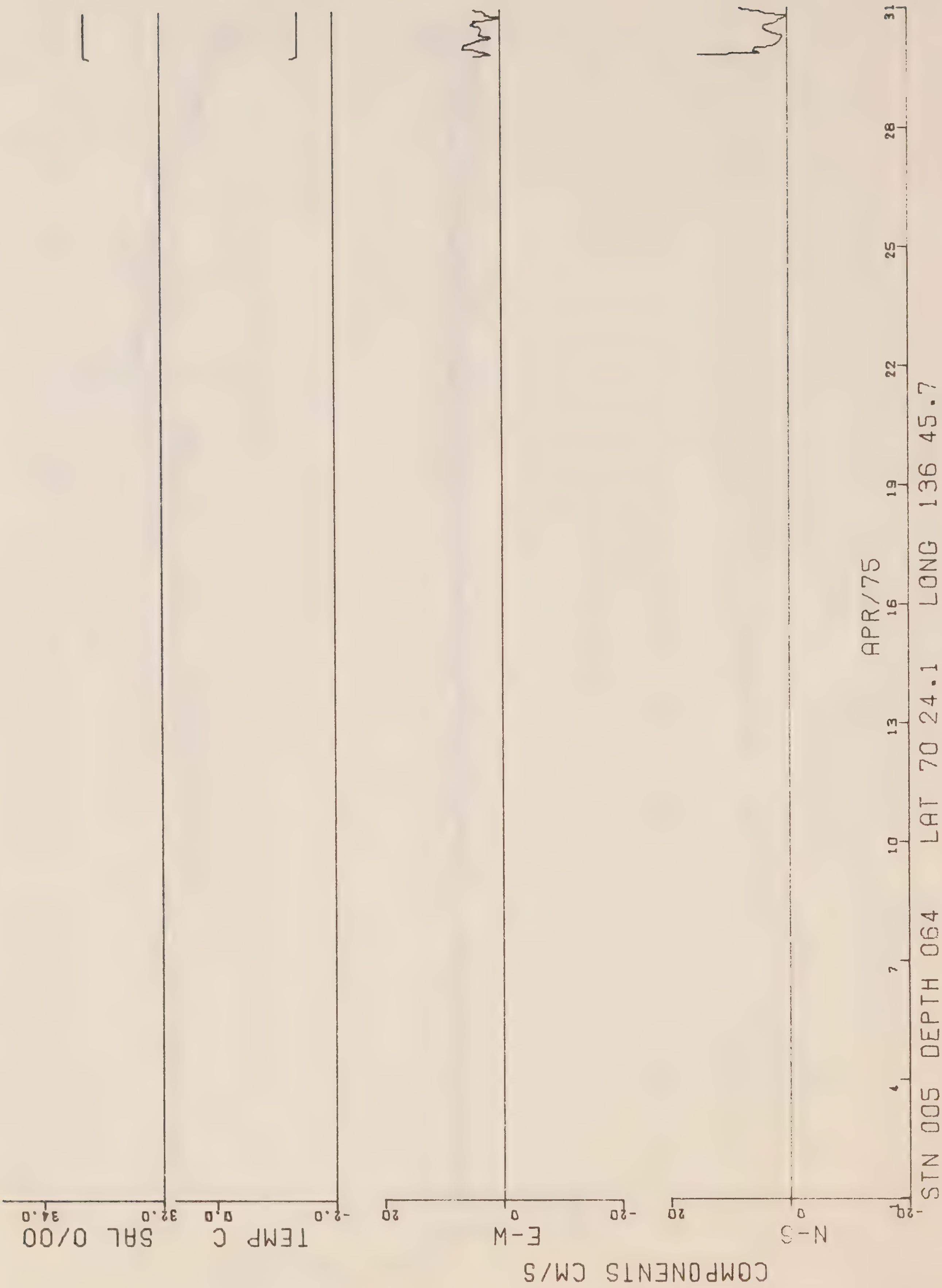
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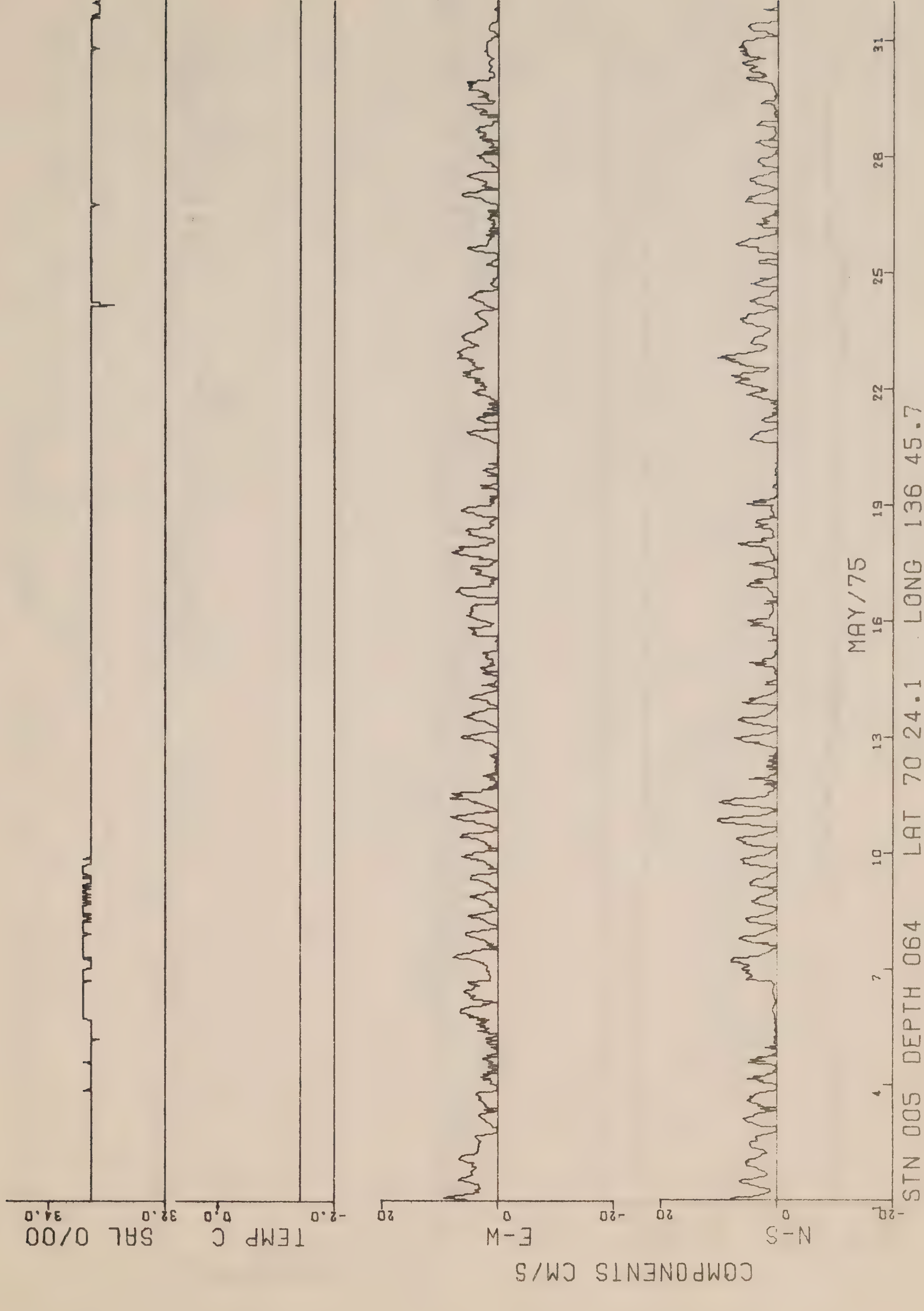
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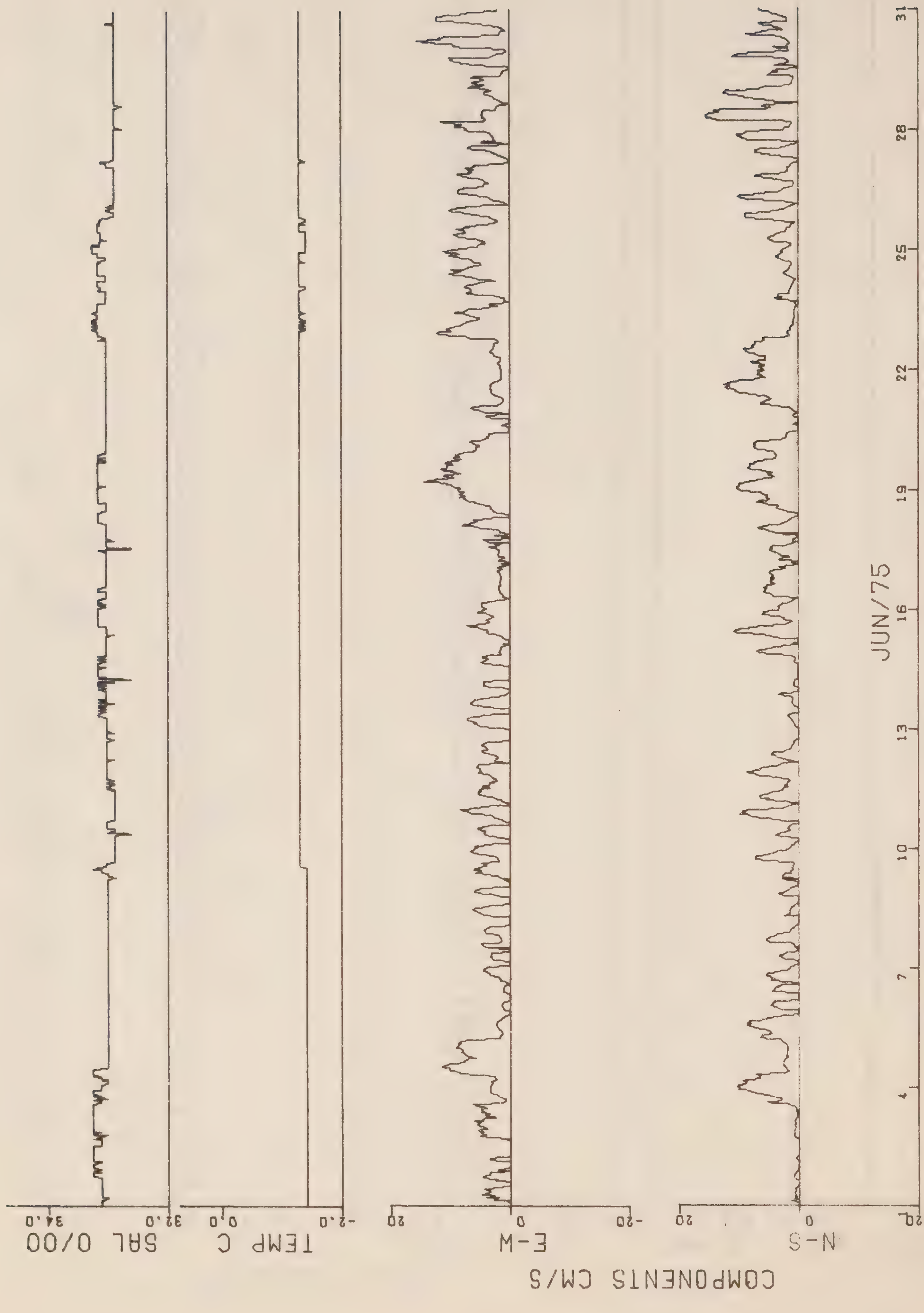

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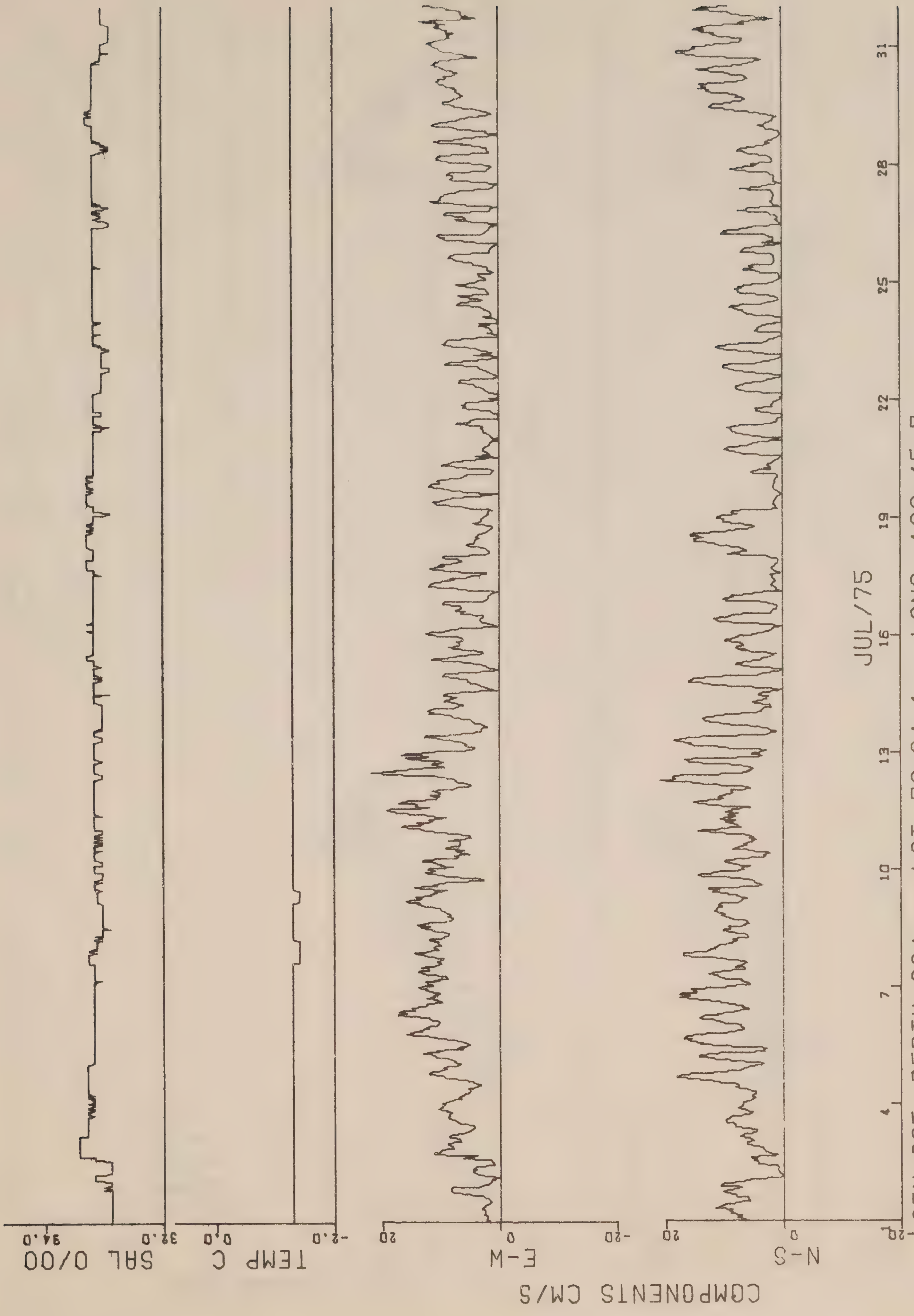
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JUL/75
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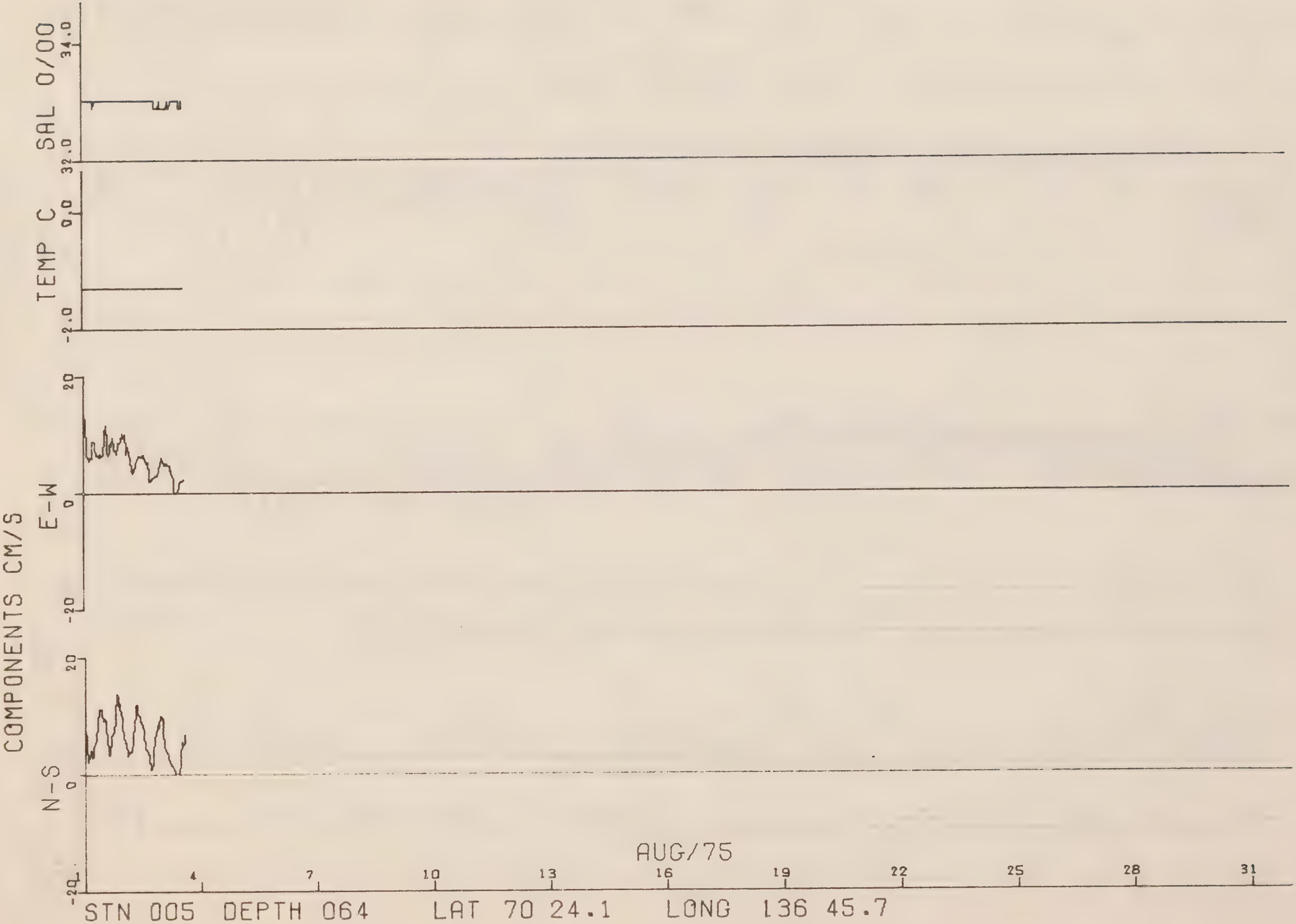
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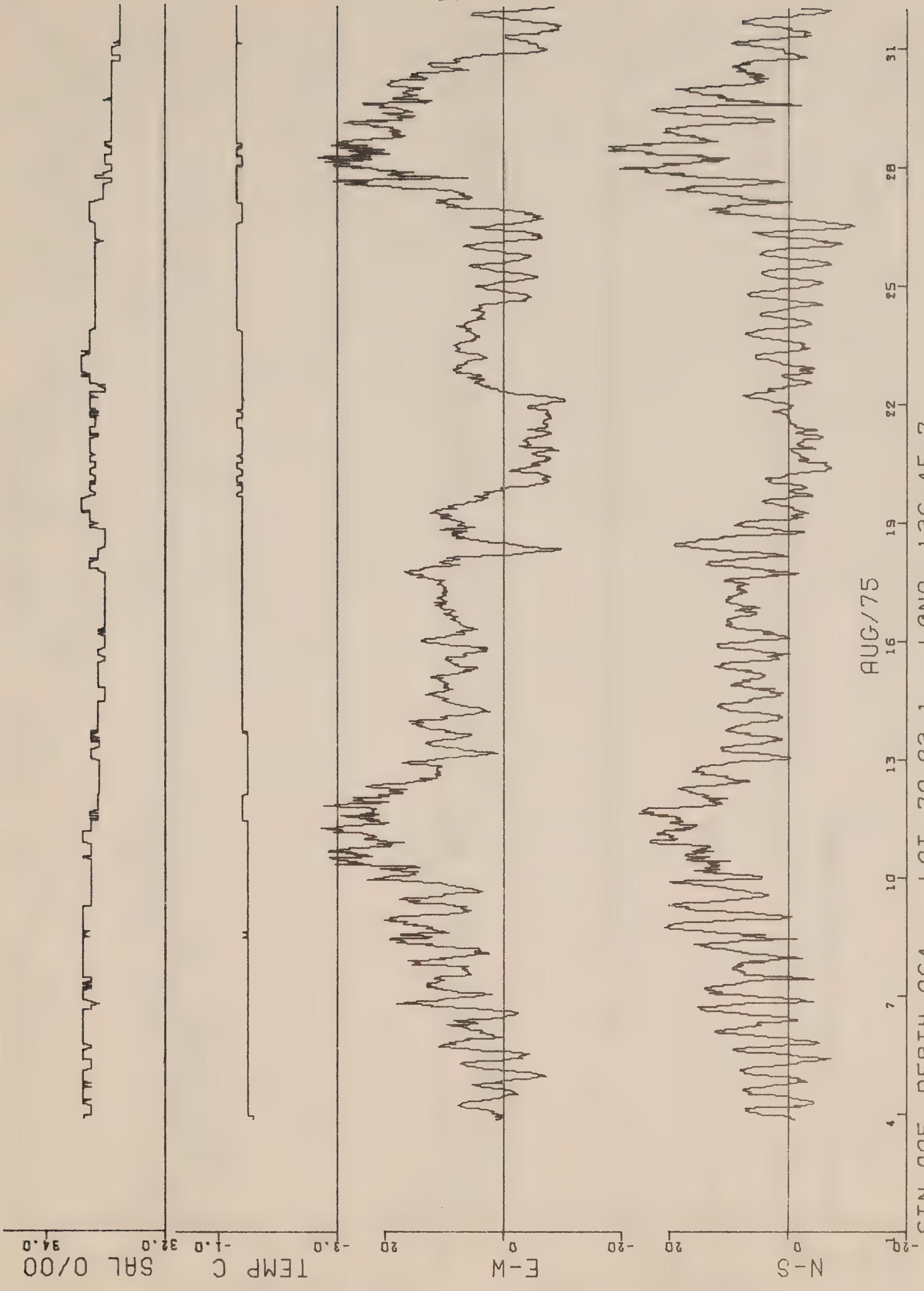
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AUG/75
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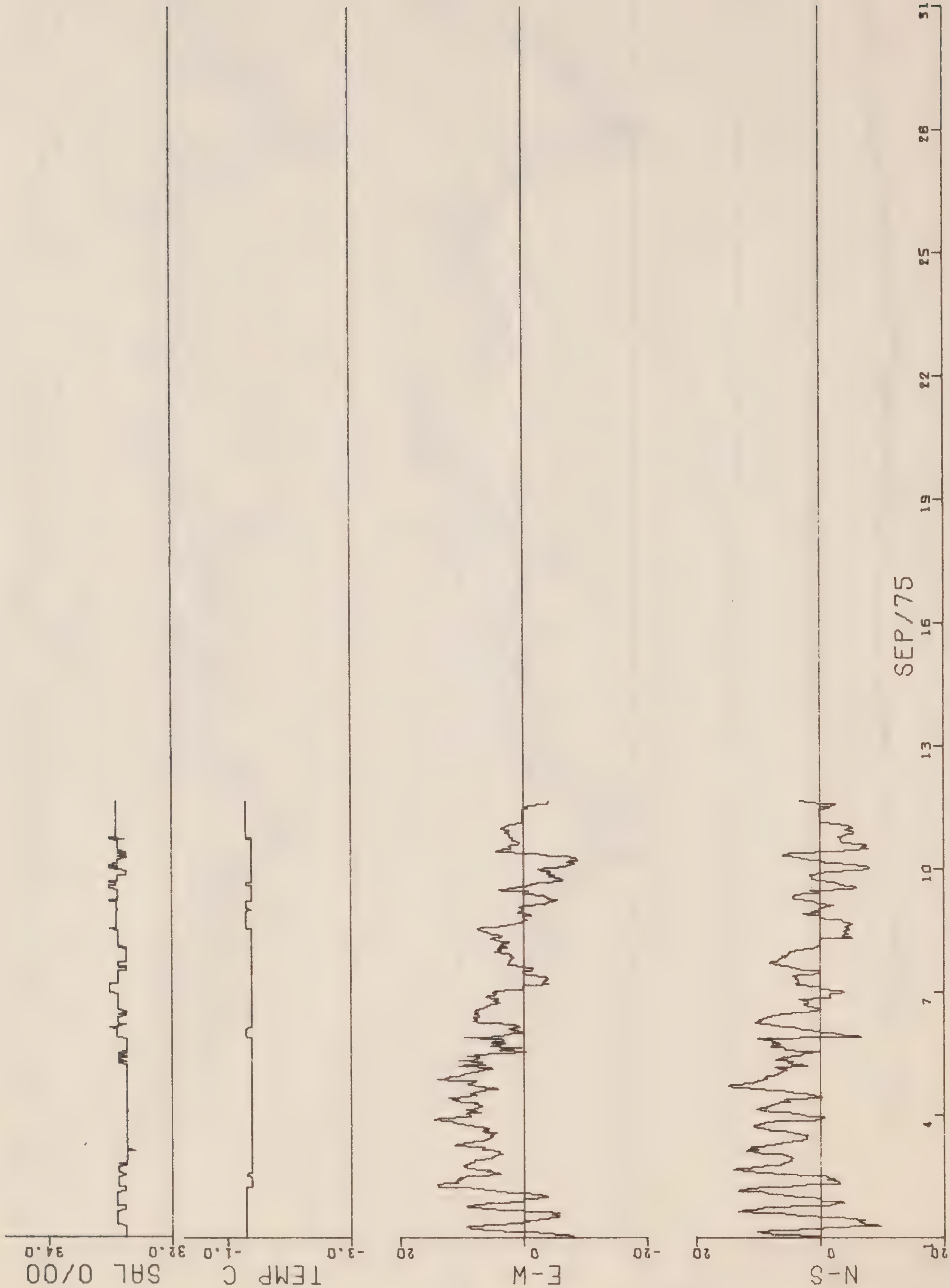

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TEMP C
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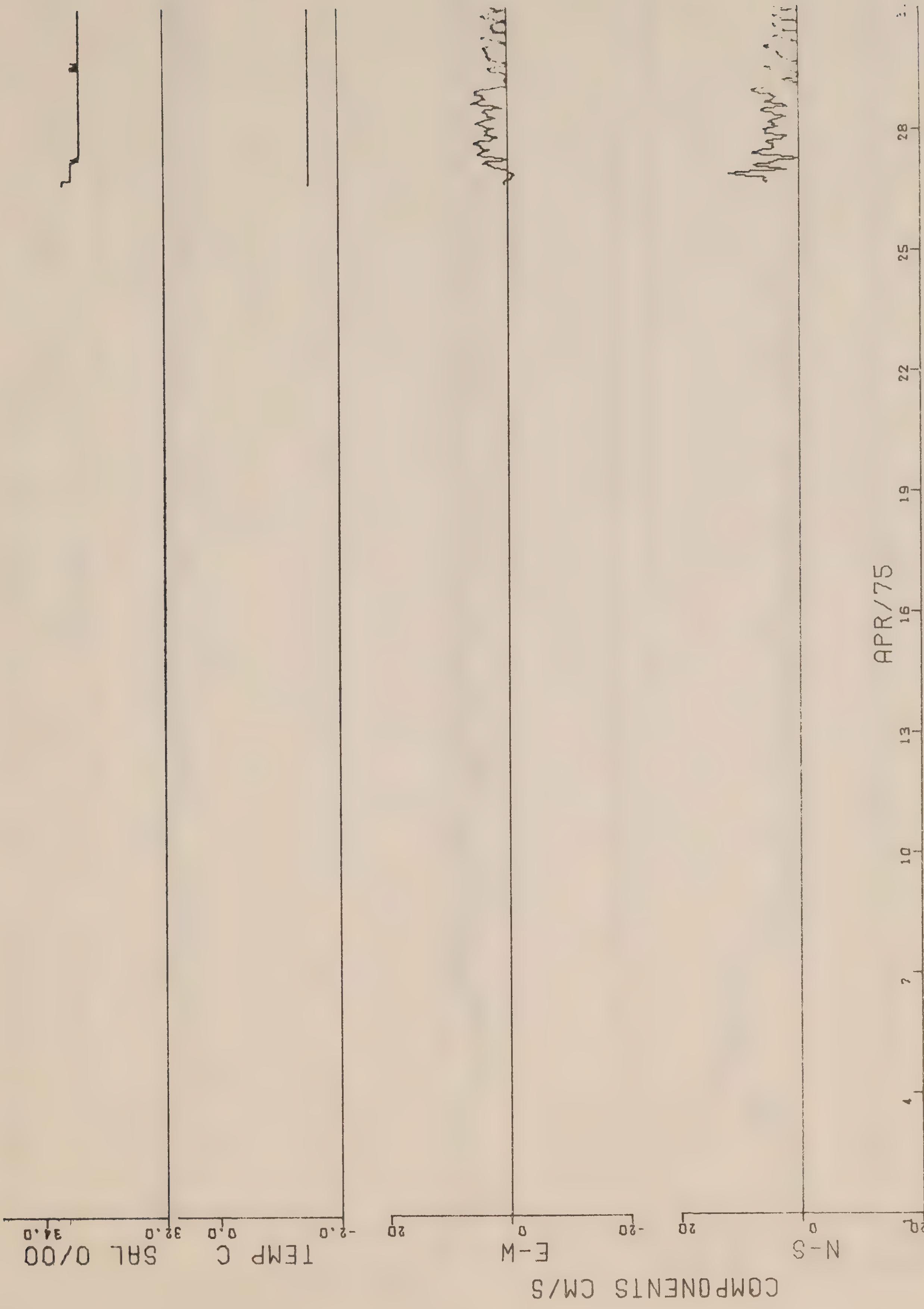
N-S
COMPONENTS CM/S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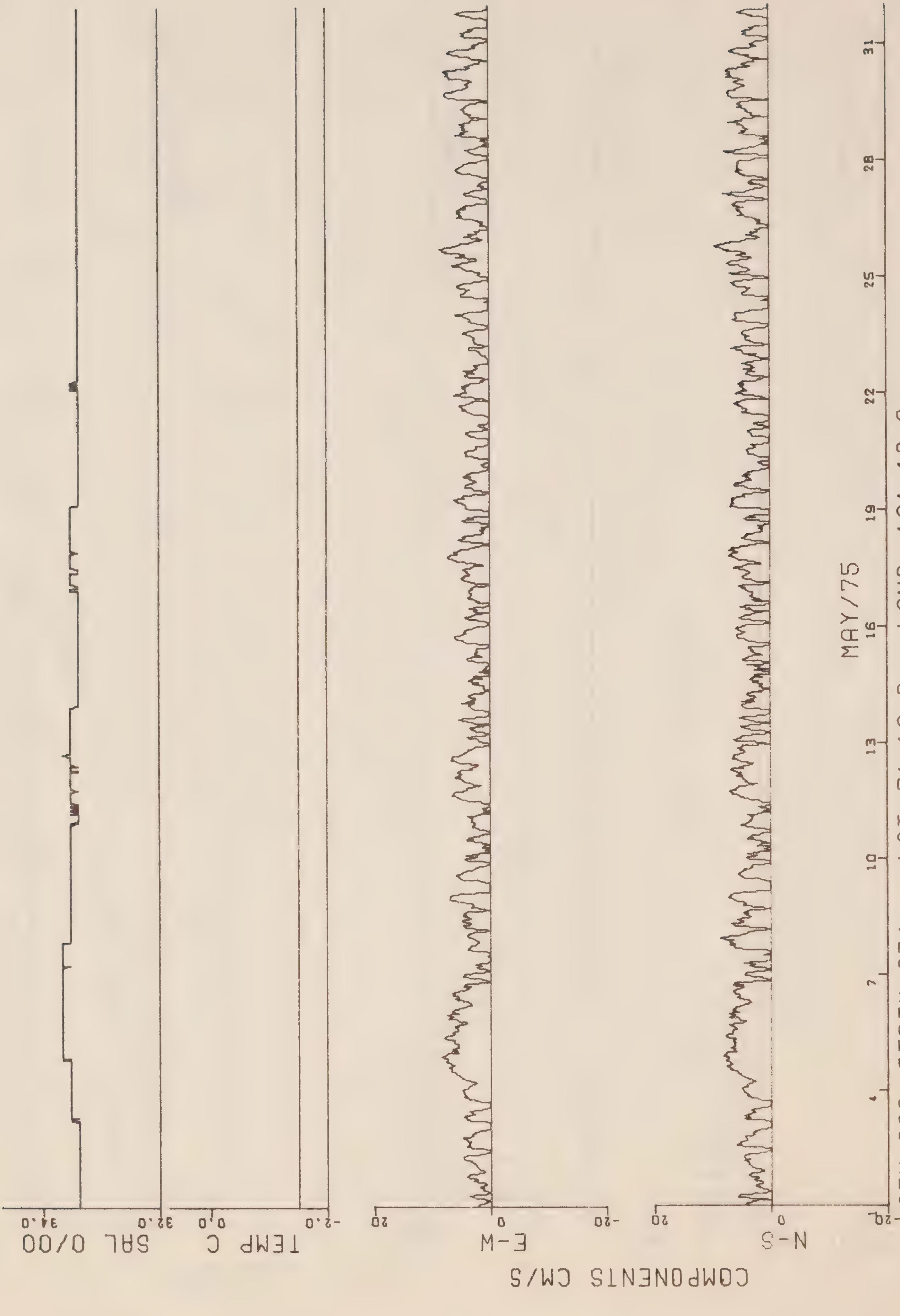
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COMPONENTS CM/S
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MAY/75
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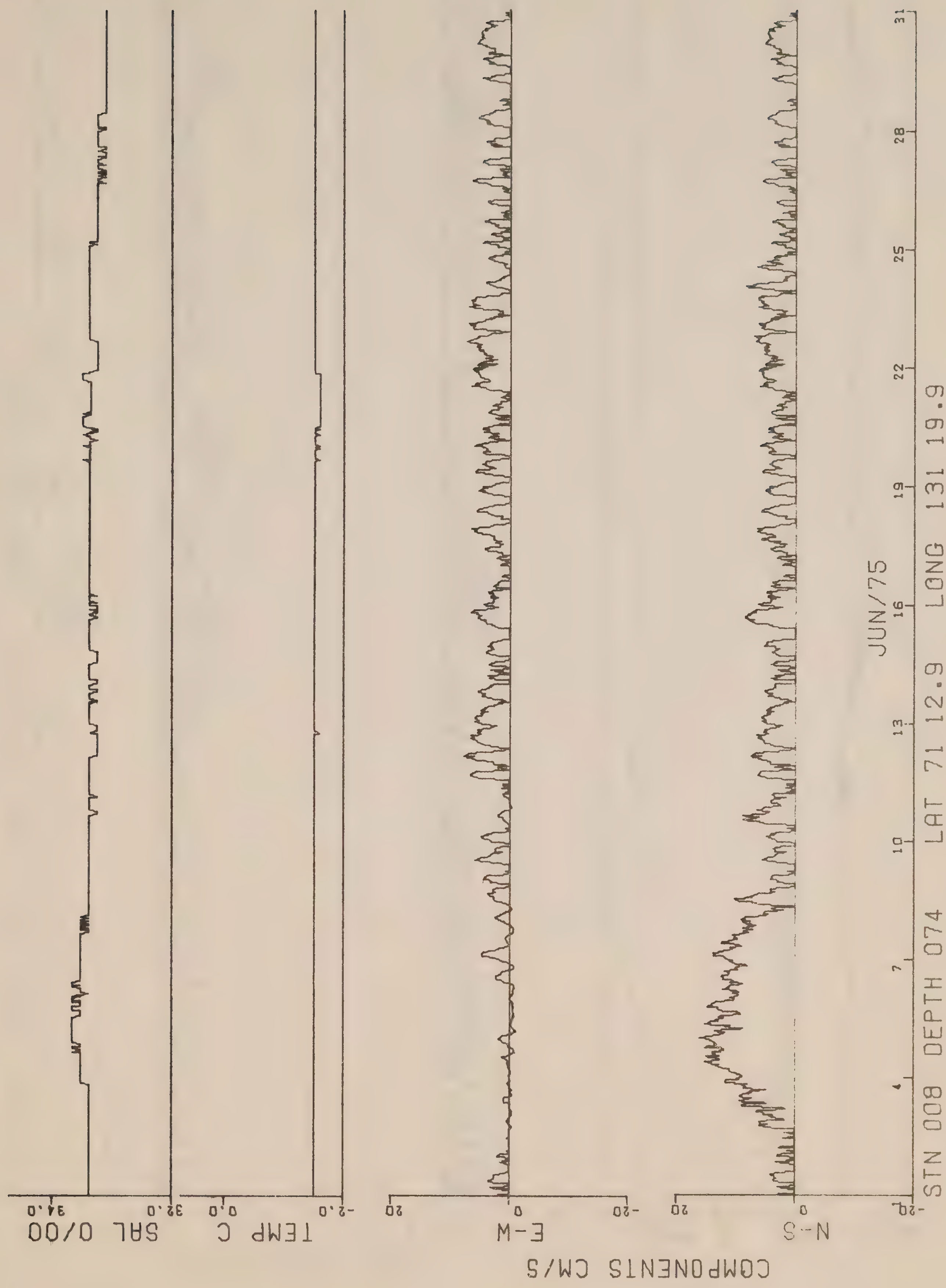
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JUN/75
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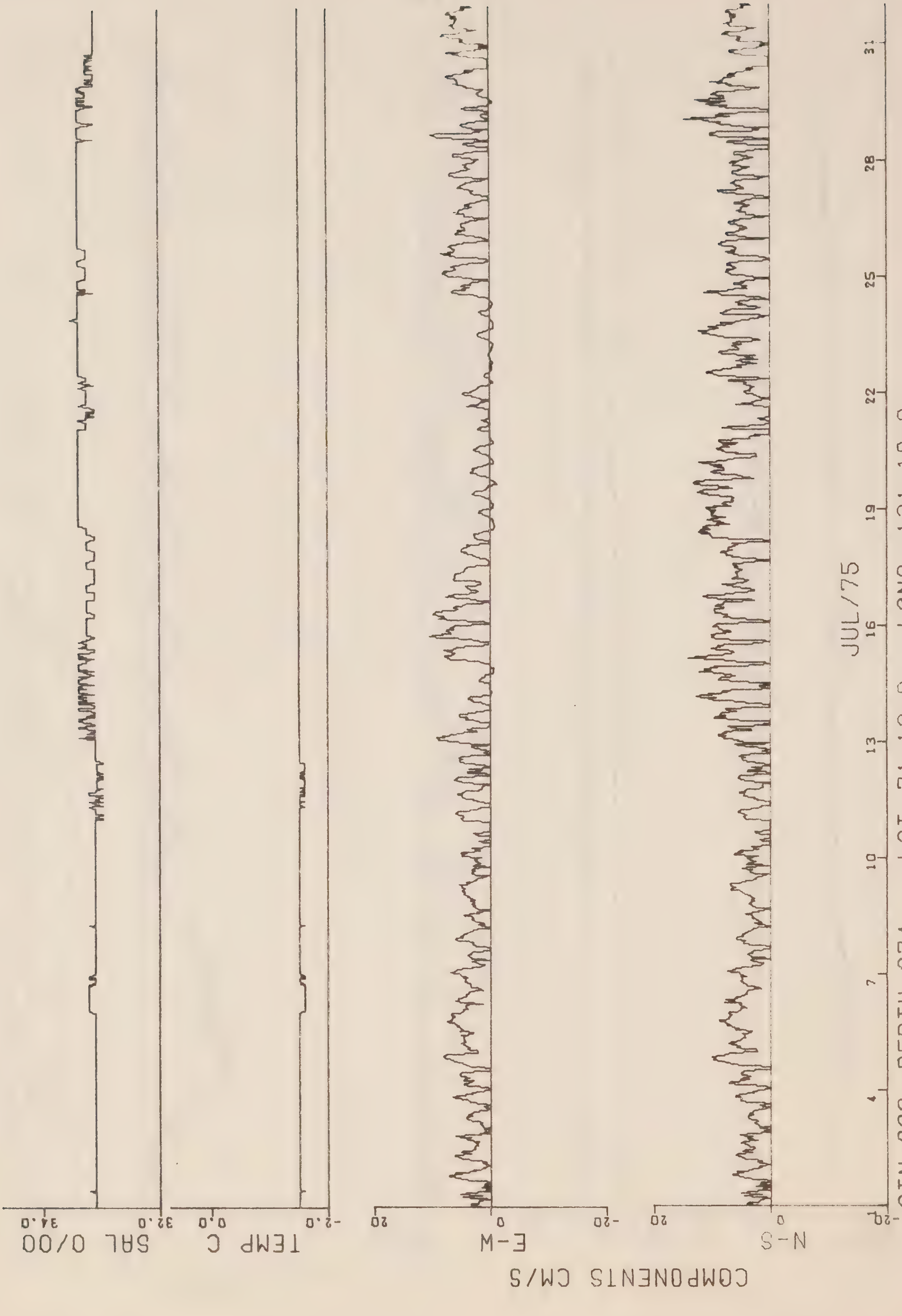
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JUL/75
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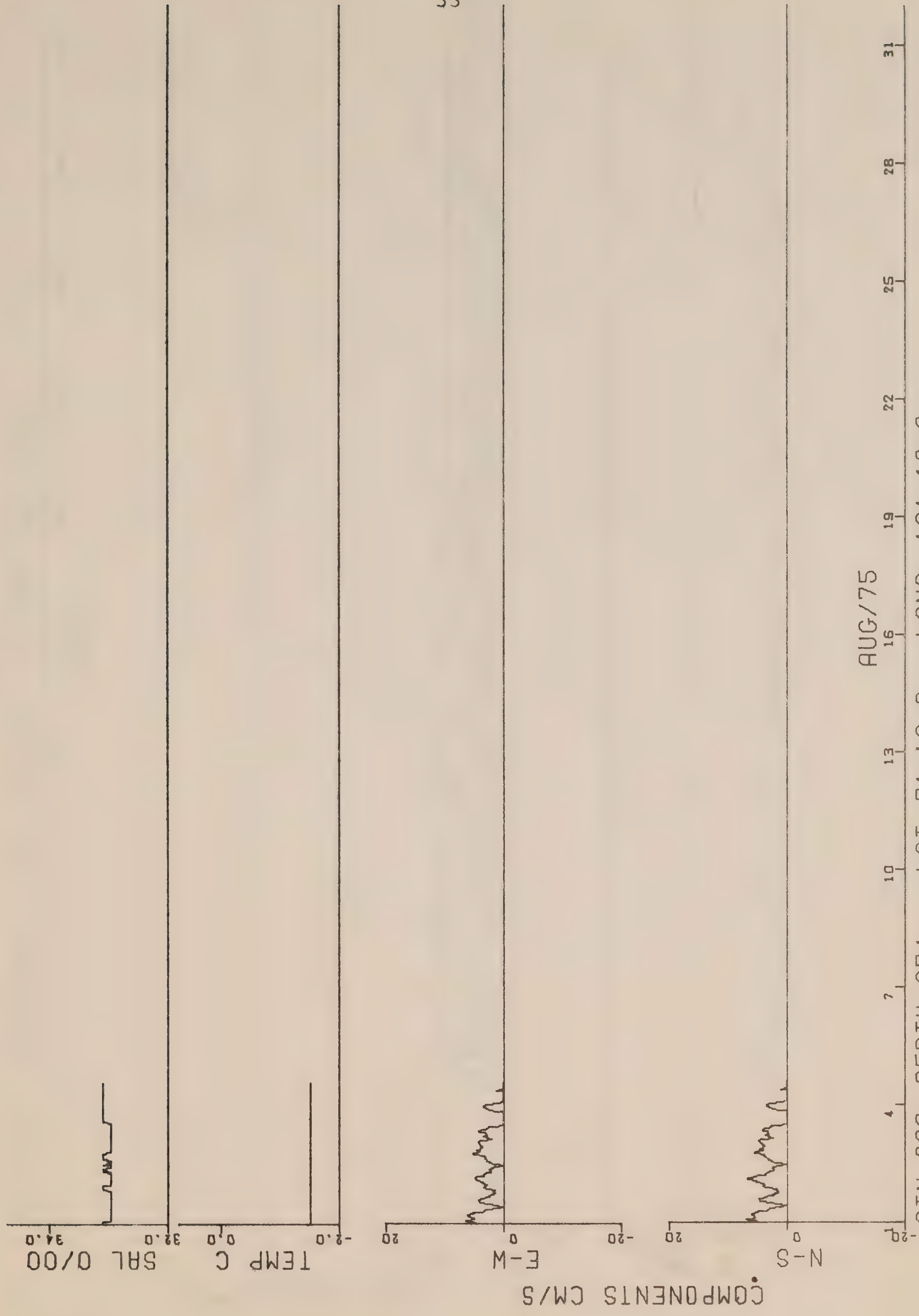

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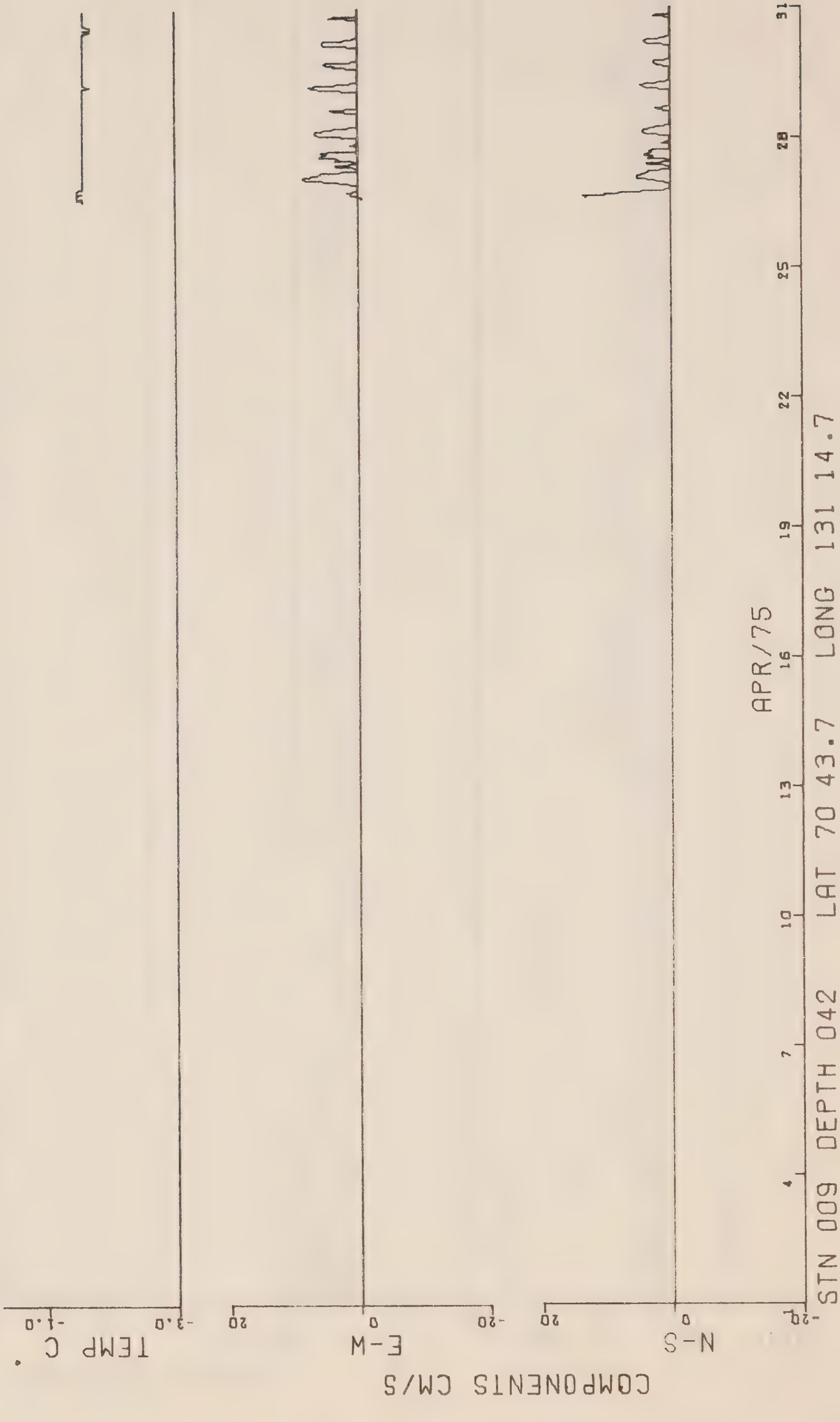
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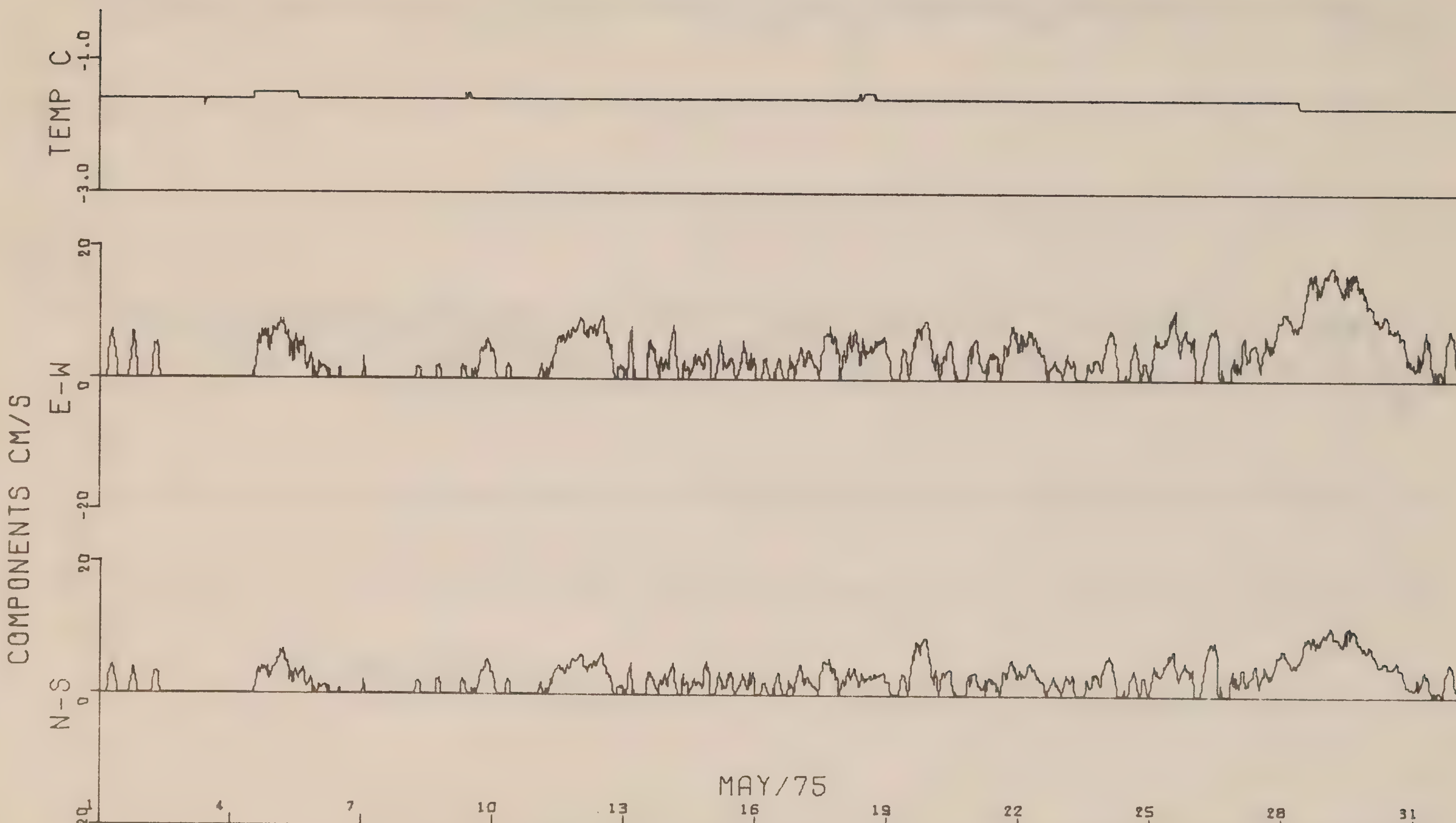
COMPONENTS CM/S



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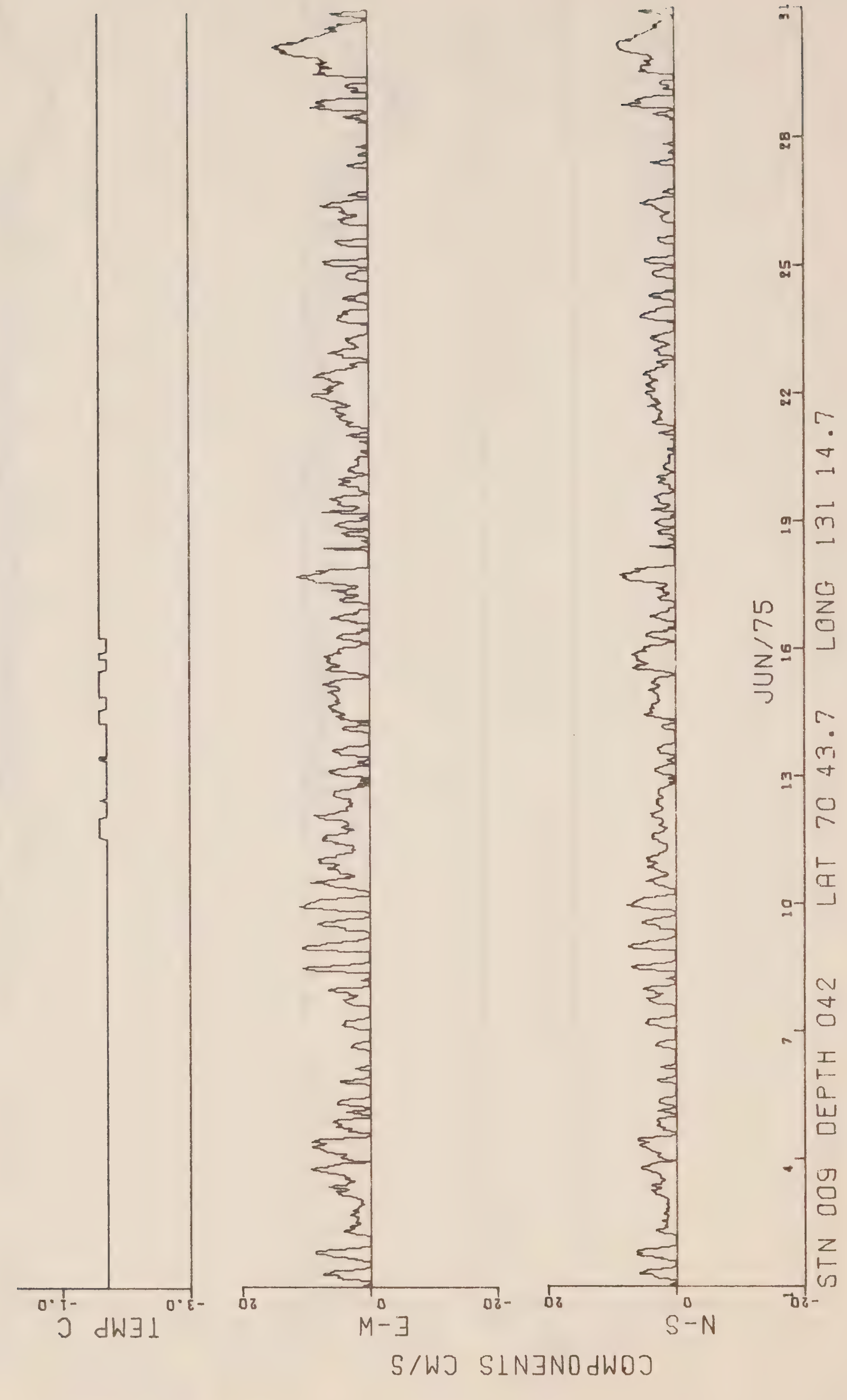

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JUN/75
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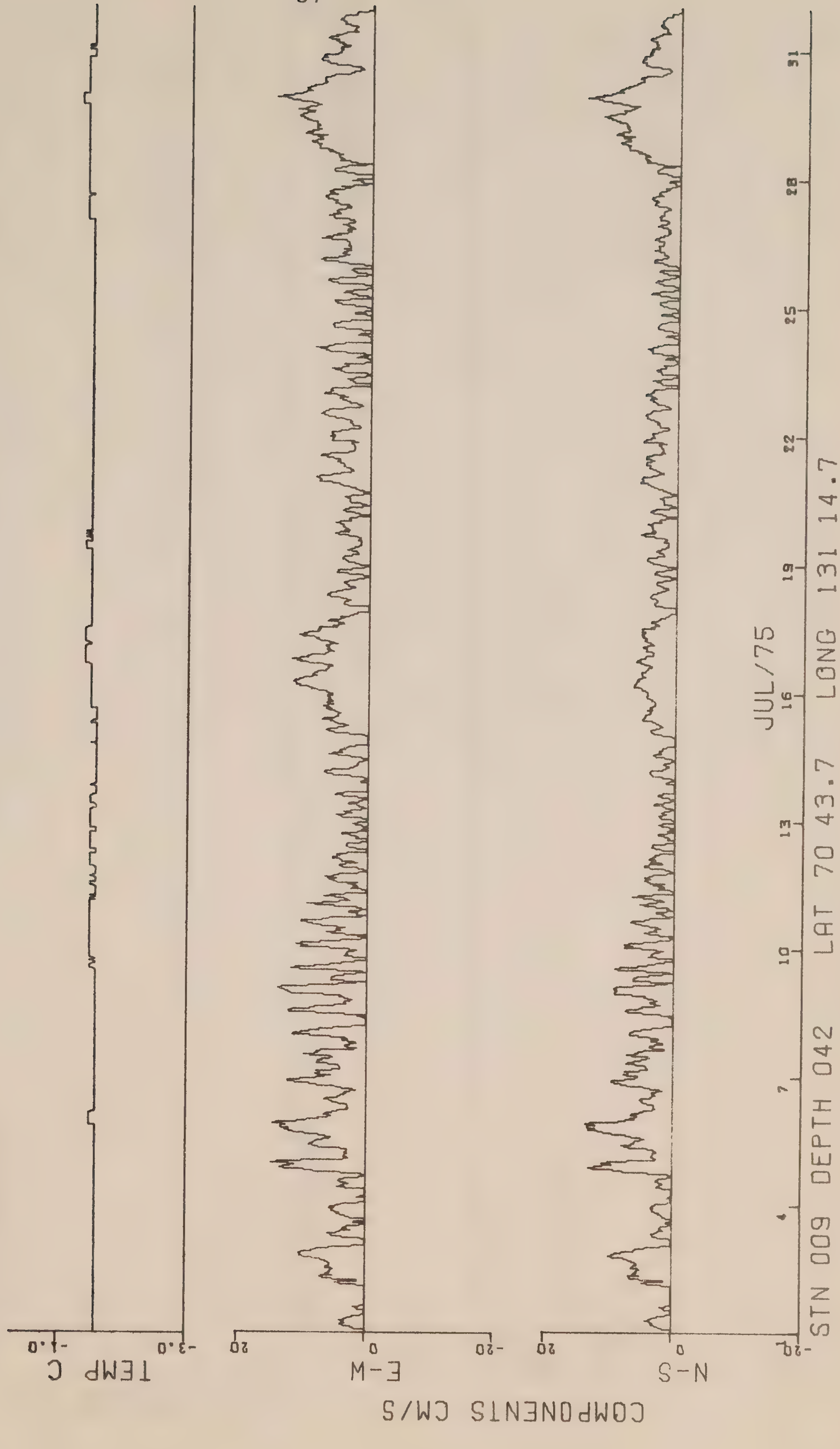
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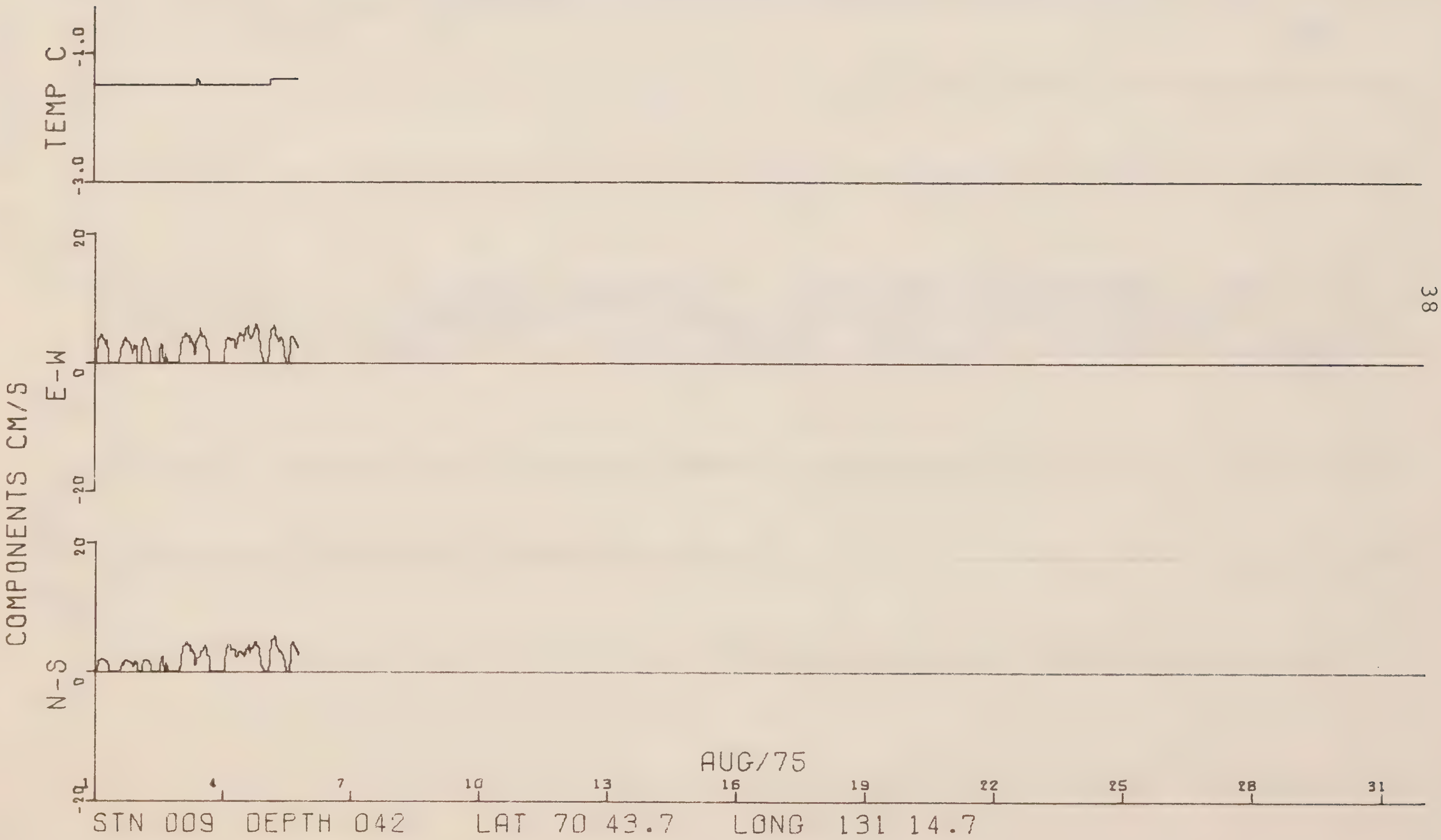
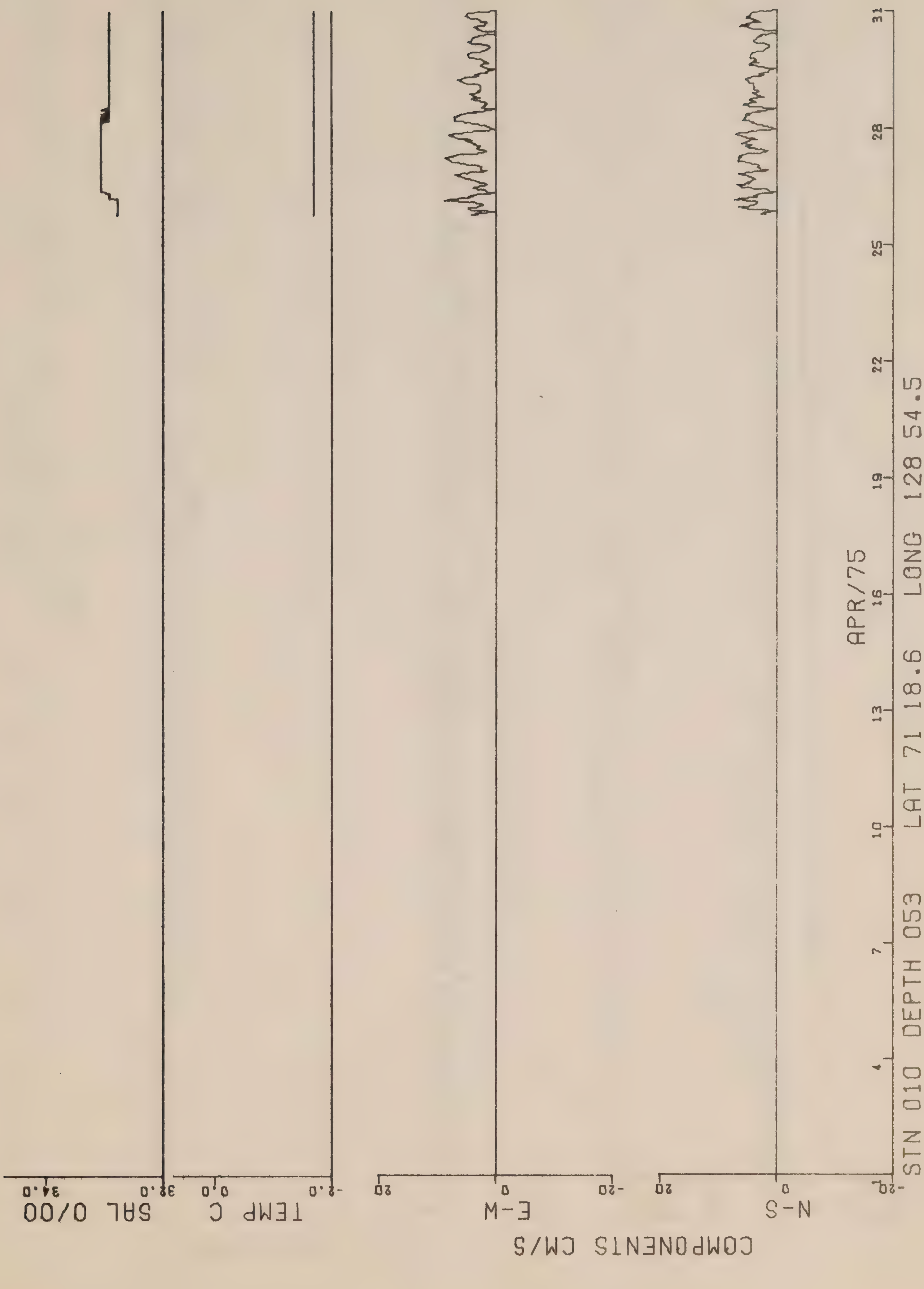
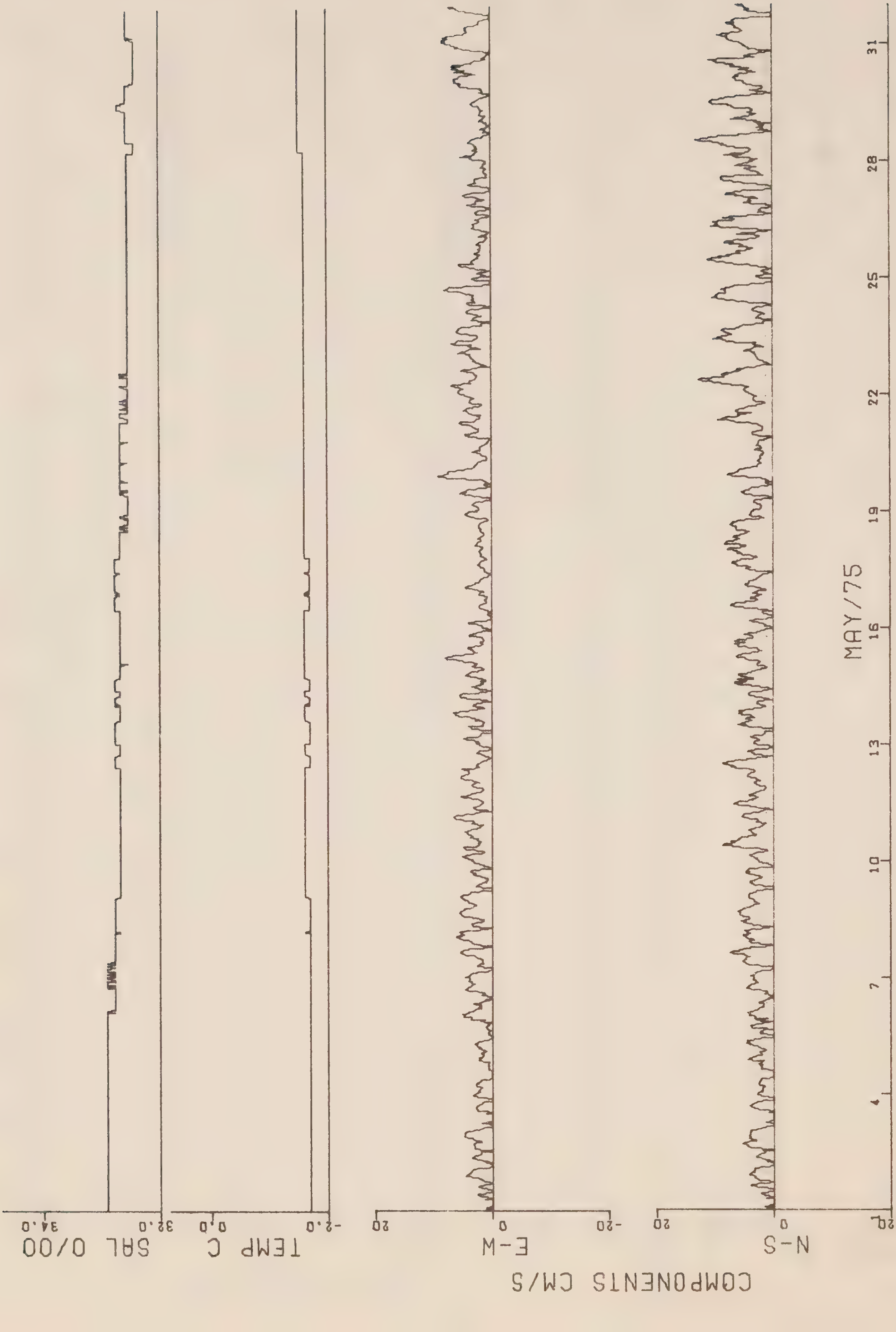
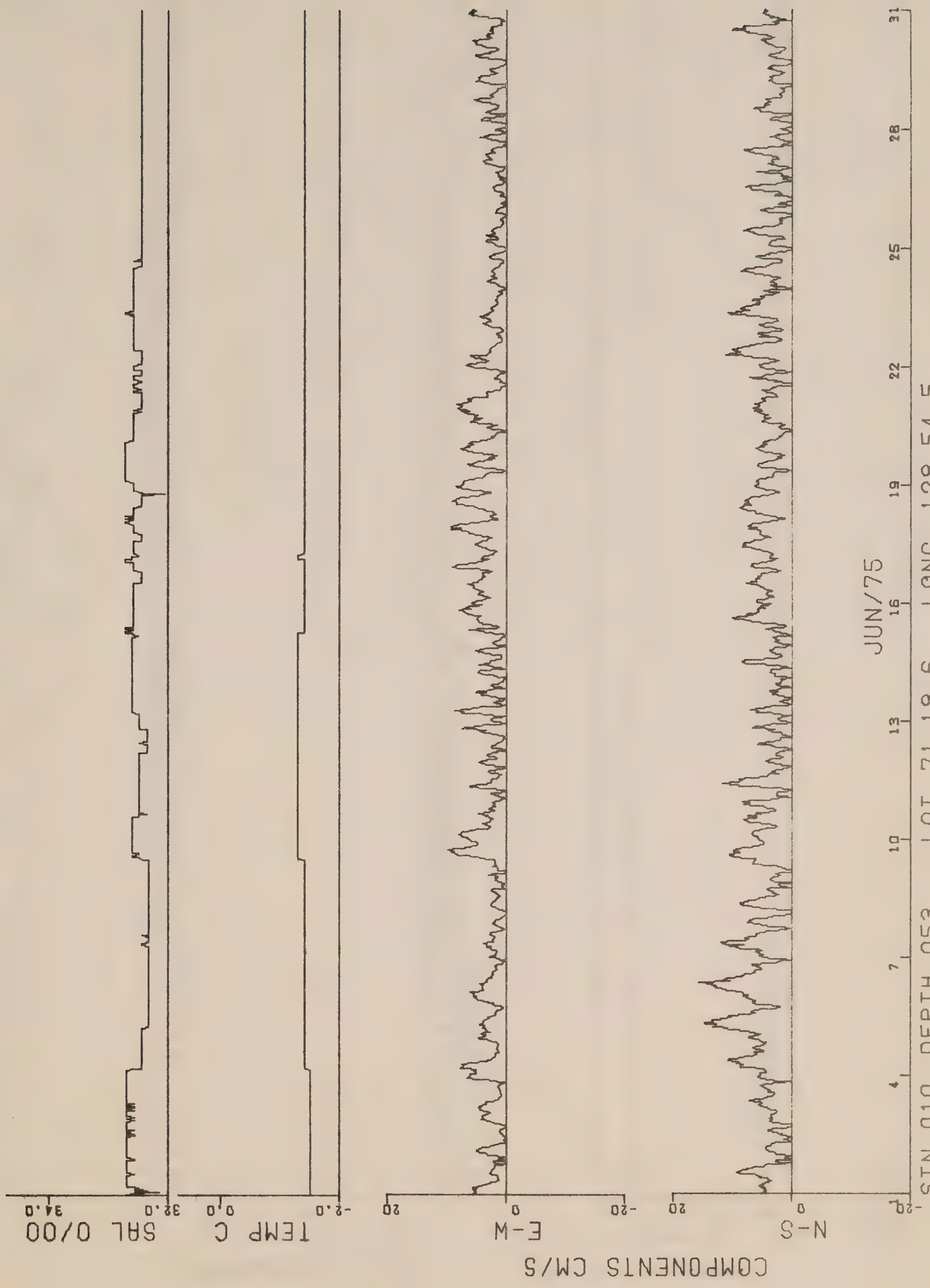
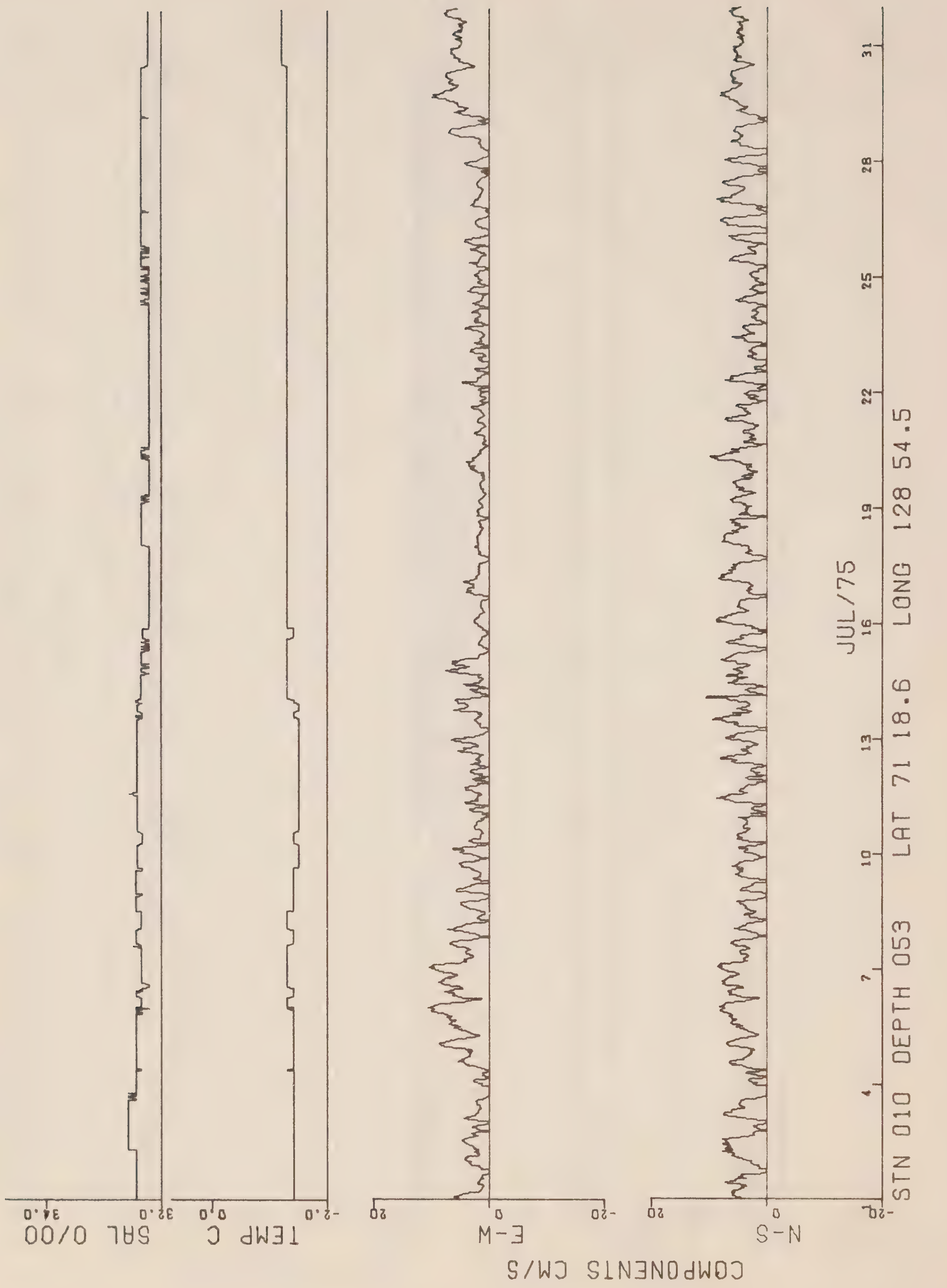
JUL/75
STN 009 DEPTH 042 LAT 70 43.7 LONG 131 14.7


TEMP C
-1.0
-3.0
COMPONENTS CM/S
E-W
20
0
-20
N-S
20
0
-20
AUG/75
1
4
7
10
13
16
19
22
25
28
31
STN 009 DEPTH 042 LAT 70 43.7 LONG 131 14.7


STN 010 DEPTH 053 LAT 71 18.6 LONG 128 54.5
APR/75
SAL O/OO
TEMP C
E-W
N-S
COMPONENTS CM/S


STN 010 DEPTH 053 LAT 71 18.6 LONG 128 54.5
MAY/75
4
7
10
13
16
19
22
25
28
31
N-S
20
0
-20
E-W
20
0
-20
COMPONENTS CM/S
TEMP C
0.0
-2.0
SAL O/OO
34.0
32.0


STN 010 DEPTH 053 LAT 71 18.6 LONG 128 54.5
JUN/75
1 4 7 10 13 16 19 22 25 28 31
SAL O/OO
34.0 32.0
TEMP C
0.0 -2.0
E-W
N-S
20 0 -20
COMPONENTS CM/S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32.0
TEMP C
0.0
-2.0
COMPONENTS CM/S
E-W
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0
-20
N-S
20
0
-20
4
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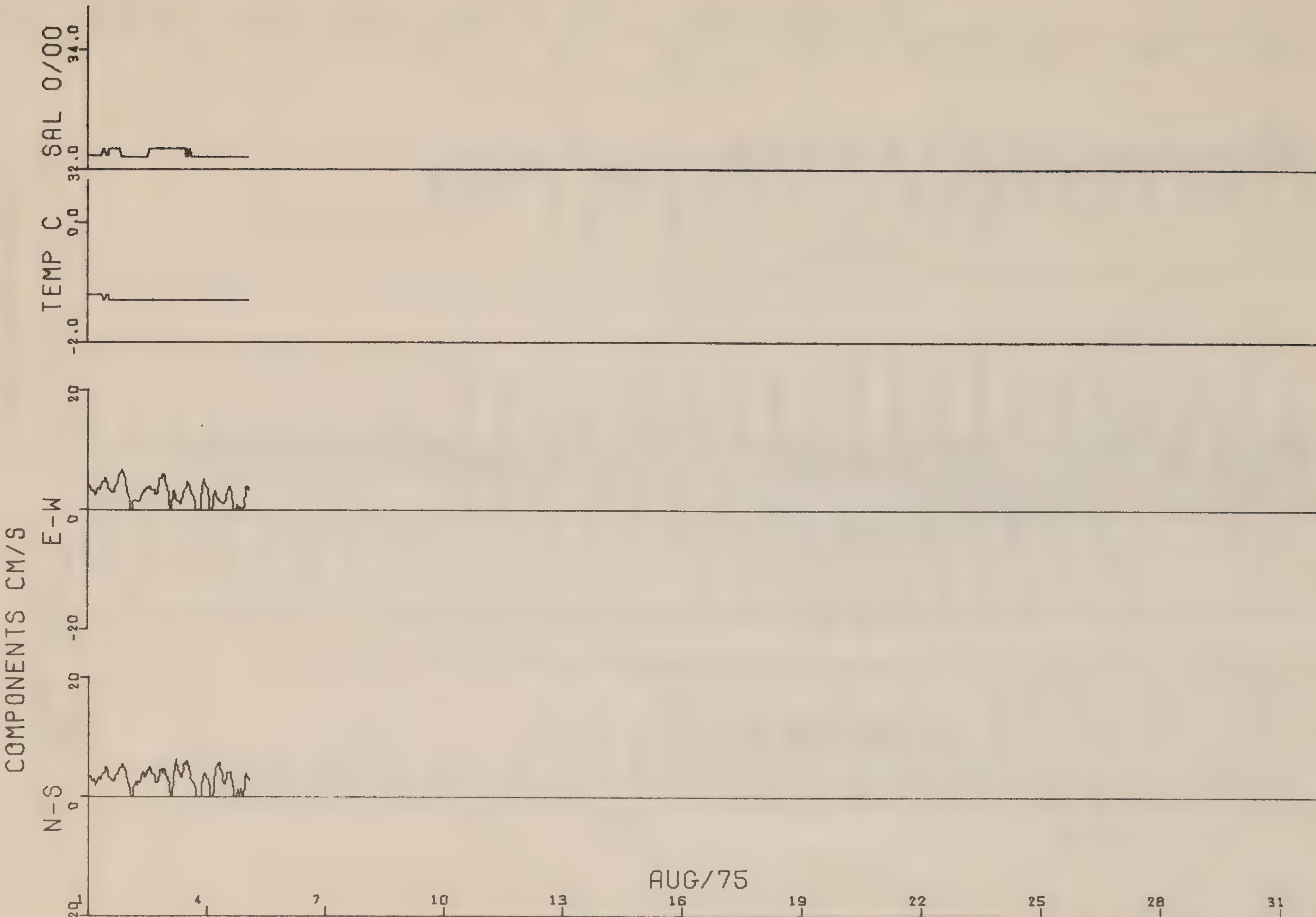
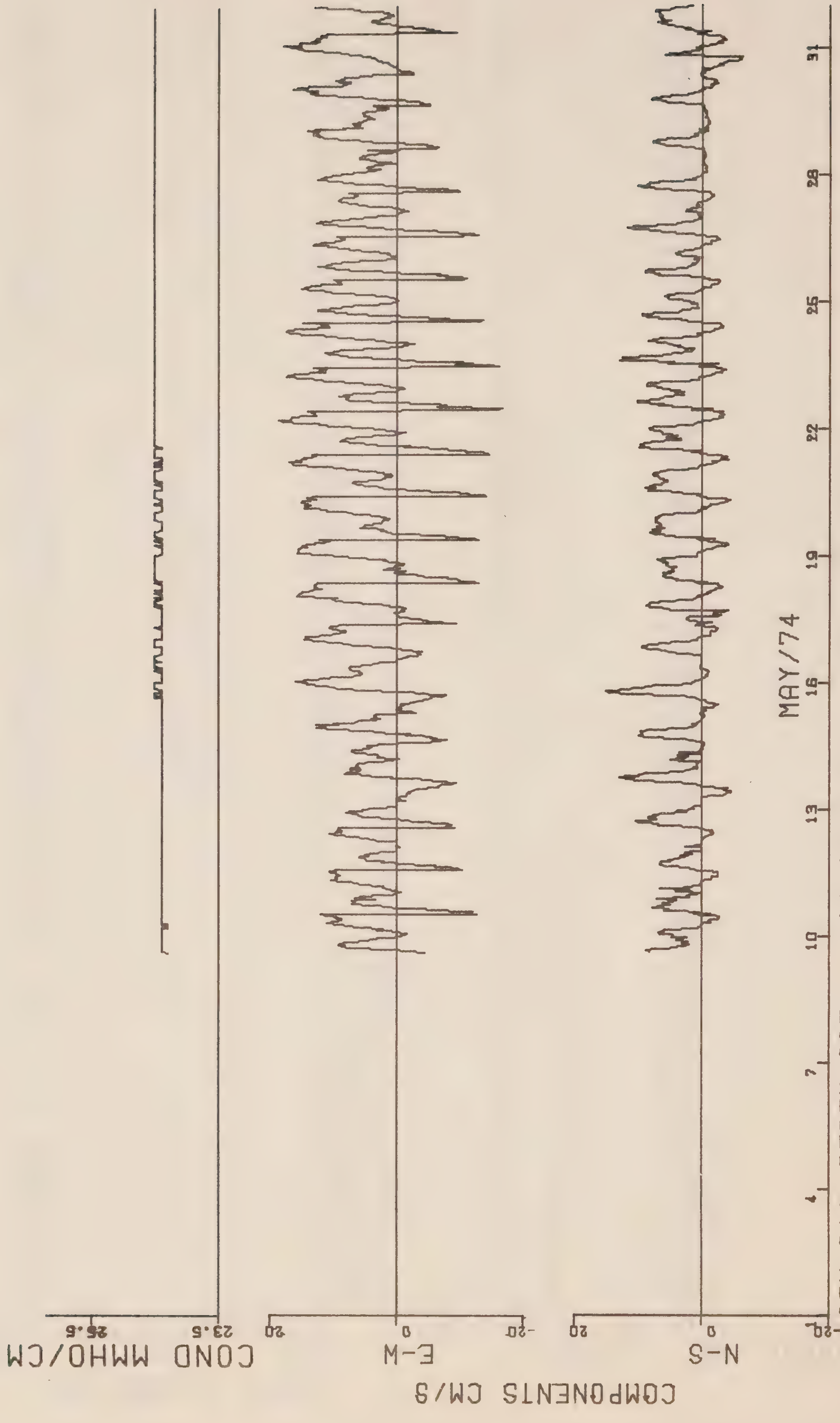
25
28
31
JUL/75
STN 010 DEPTH 053 LAT 71 18.6 LONG 128 54.5



STN 010 DEPTH 053 LAT 71 18.6 LONG 128 54.5


COND MMHO/CM
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23.5
E-W
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-20
N-S
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0
-20
COMPONENTS CM/S
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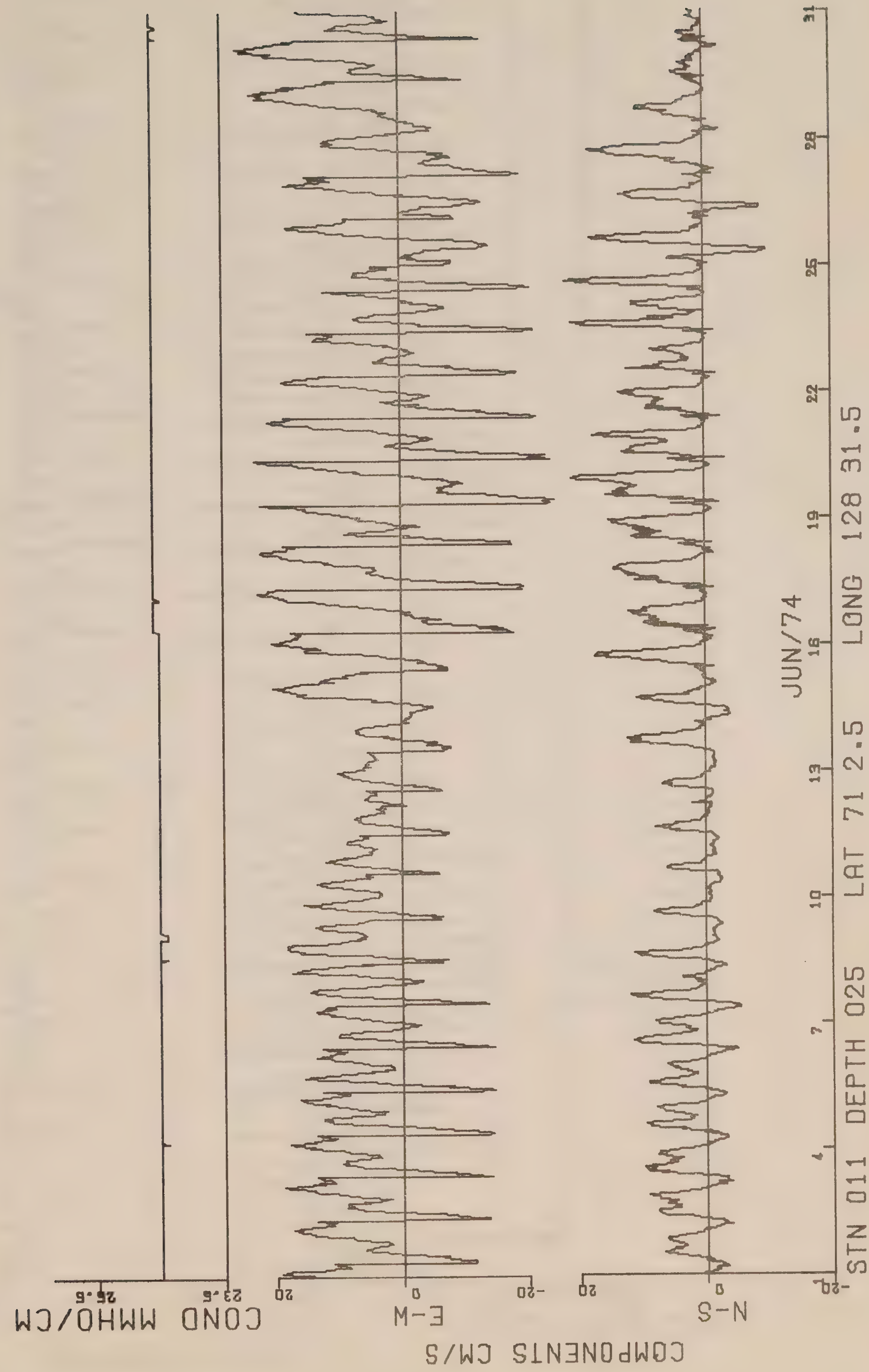
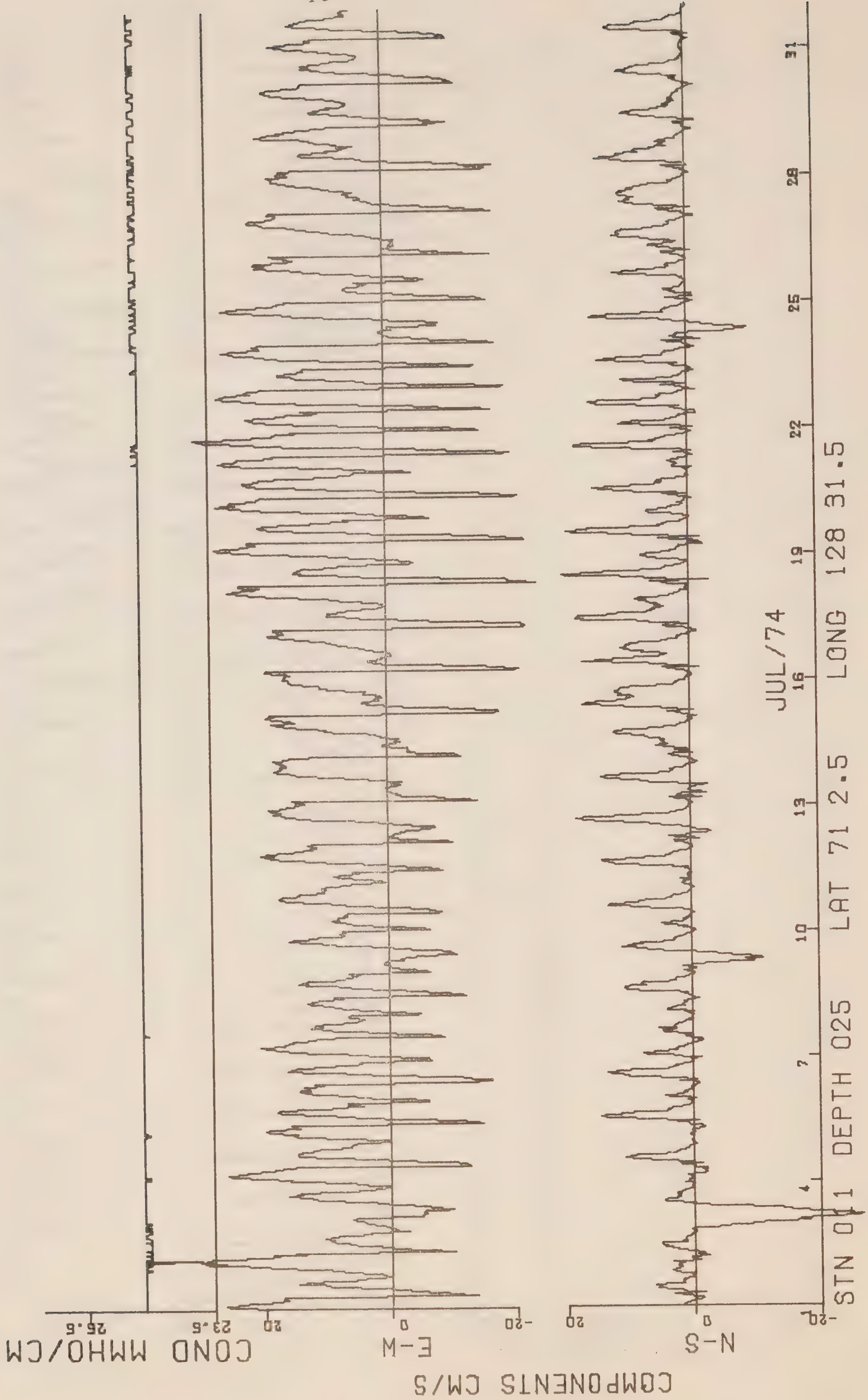
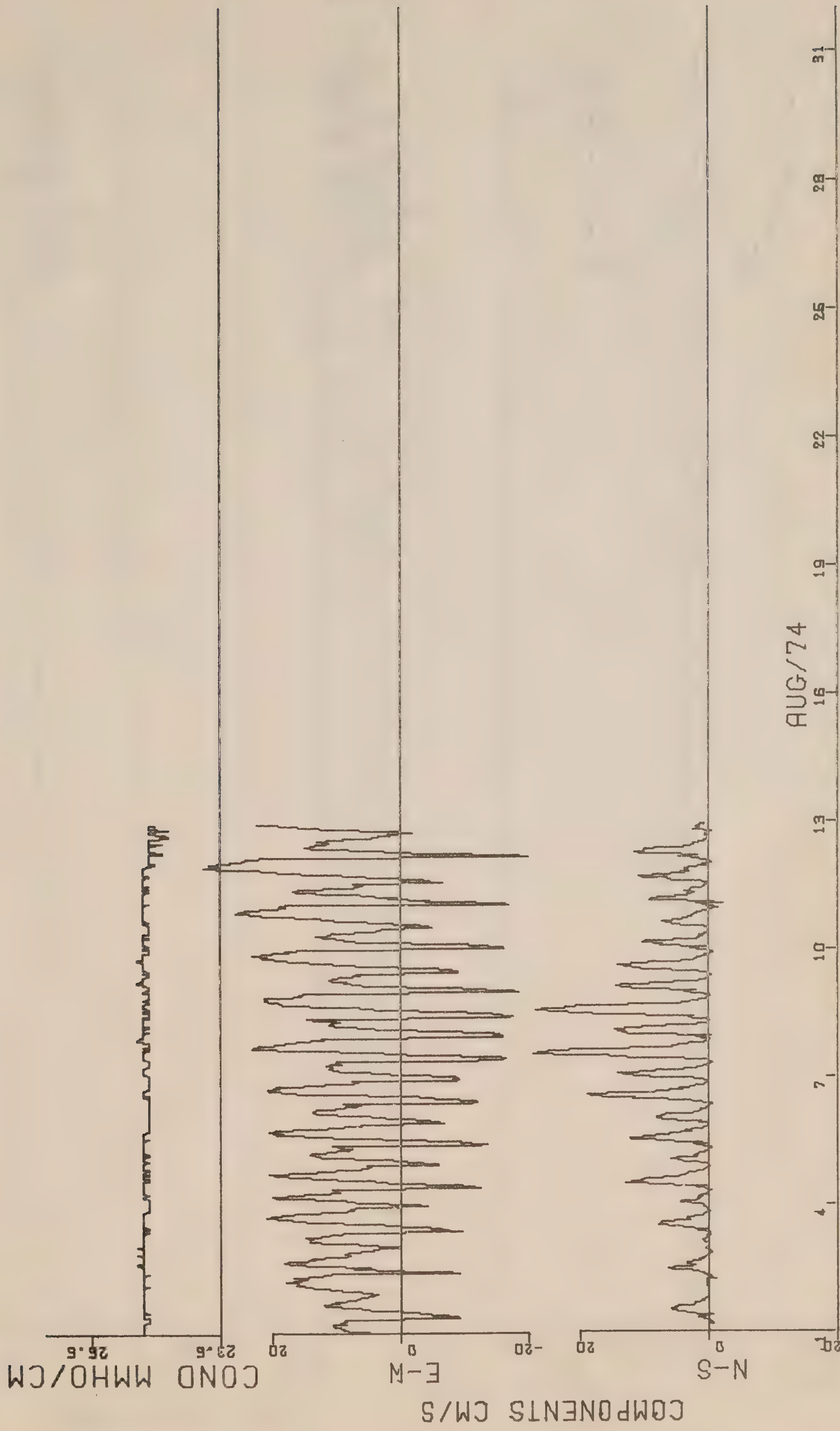
10
13
16
19
22
25
28
31
MAY/74
STN 011 DEPTH 025 LAT 71 2.5 LONG 128 31.5


COND MMHO/CM
23.5
25.5
E-W
N-S
COMPONENTS CM/S
20
0
-20
1
4
7
10
13
16
19
22
25
28
31
JUN/74
STN 011 DEPTH 025 LAT 71 2.5 LONG 128 31.5


COND MMHO/CM
25.5
23.5
20
0
-20
E-W
N-S
COMPONENTS CM/S
4
7
10
13
16
19
22
25
28
31
JUL/74
STN 0 1 DEPTH 025 LAT 71 2.5 LONG 128 31.5



STN 011 DEPTH 025 LAT 71 2.5 LONG 128 31.5
AUG/74
1
4
7
10
13
16
19
22
25
28
31
COMPONENTS CM/S
N-S
E-W
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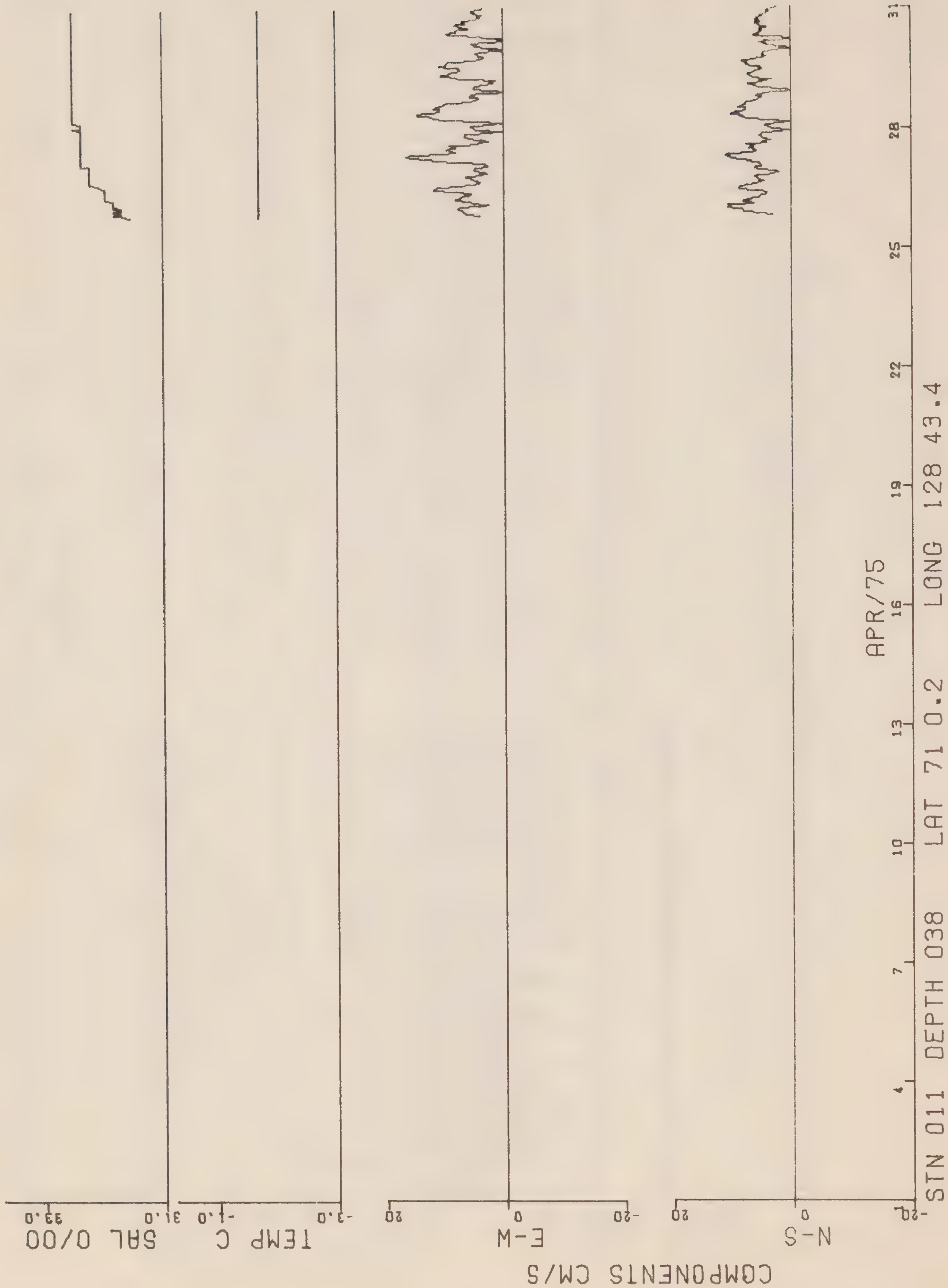
0
-20
COND MMHO/CM
23.6
26.6


STN 011 DEPTH 038 LAT 71 0.2 LONG 128 43.4
APR/75
4
7
10
13
16
19
22
25
28
31
SAL O/OO
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31.0
TEMP C
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-3.0
E-W
N-S
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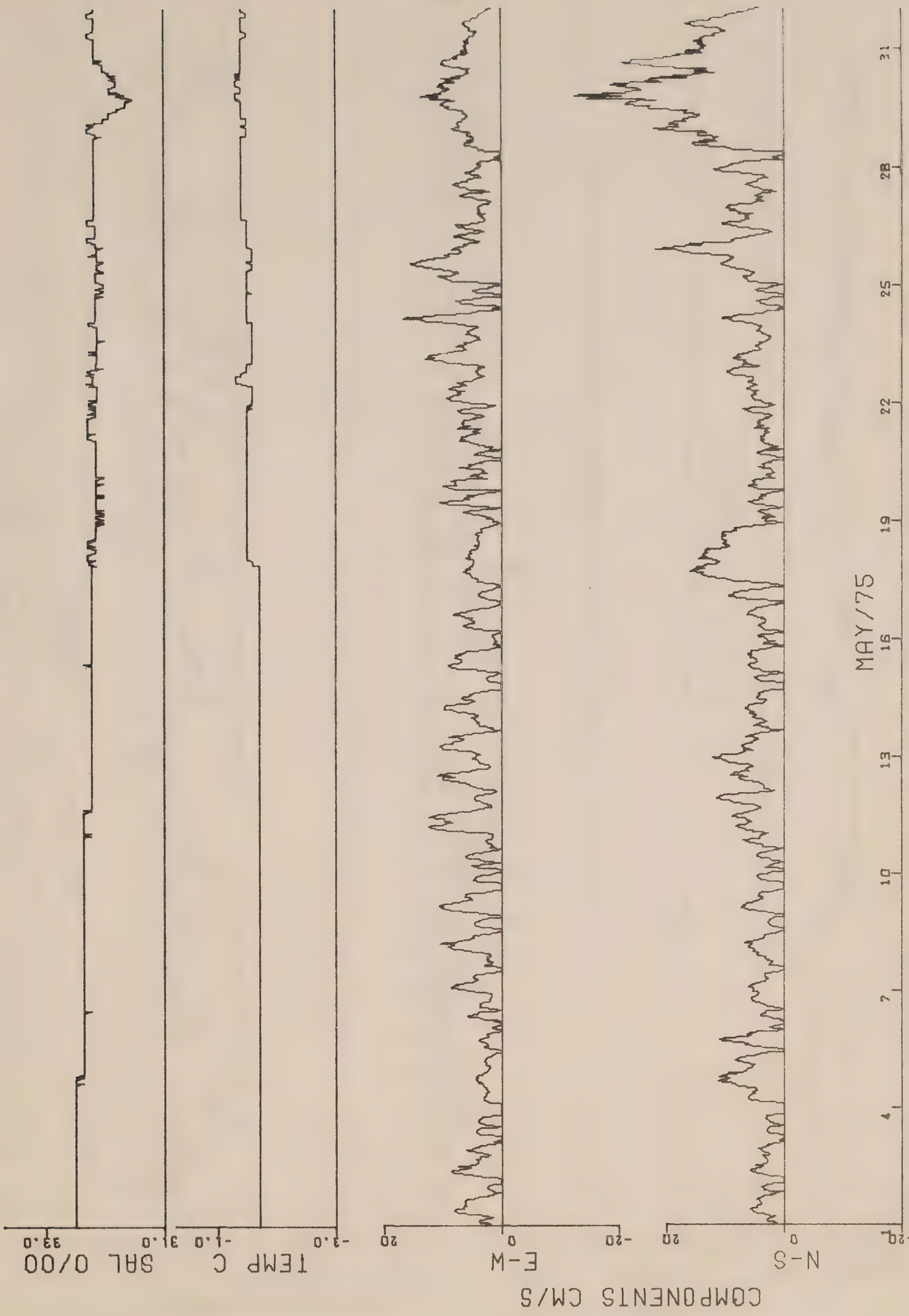
0
-20
COMPONENTS CM/S


STN 011 DEPTH 038 LAT 71 0.2 LONG 128 43.4
MAY/75
SAL O/OO
TEMP C
COMPONENTS CM/S
E-W
N-S
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31.0
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-3.0
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0
-20
4
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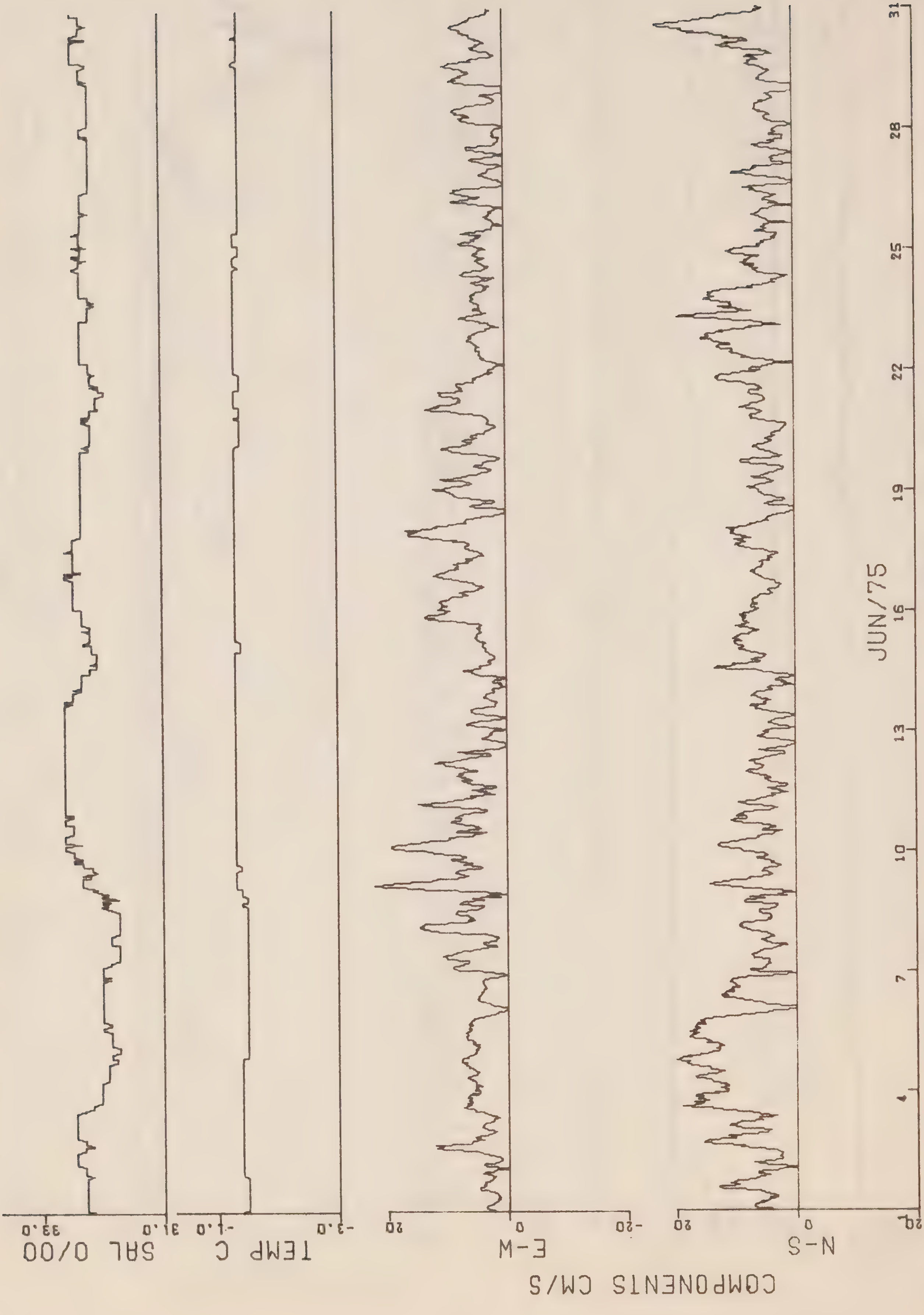
STN 011 DEPTH 038 LAT 71 0.2 LONG 128 43.4
JUN/75
SAL O/OO
33.0
31.0
TEMP C
-1.0
-3.0
E-W
N-S
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0
-20
COMPONENTS CM/S
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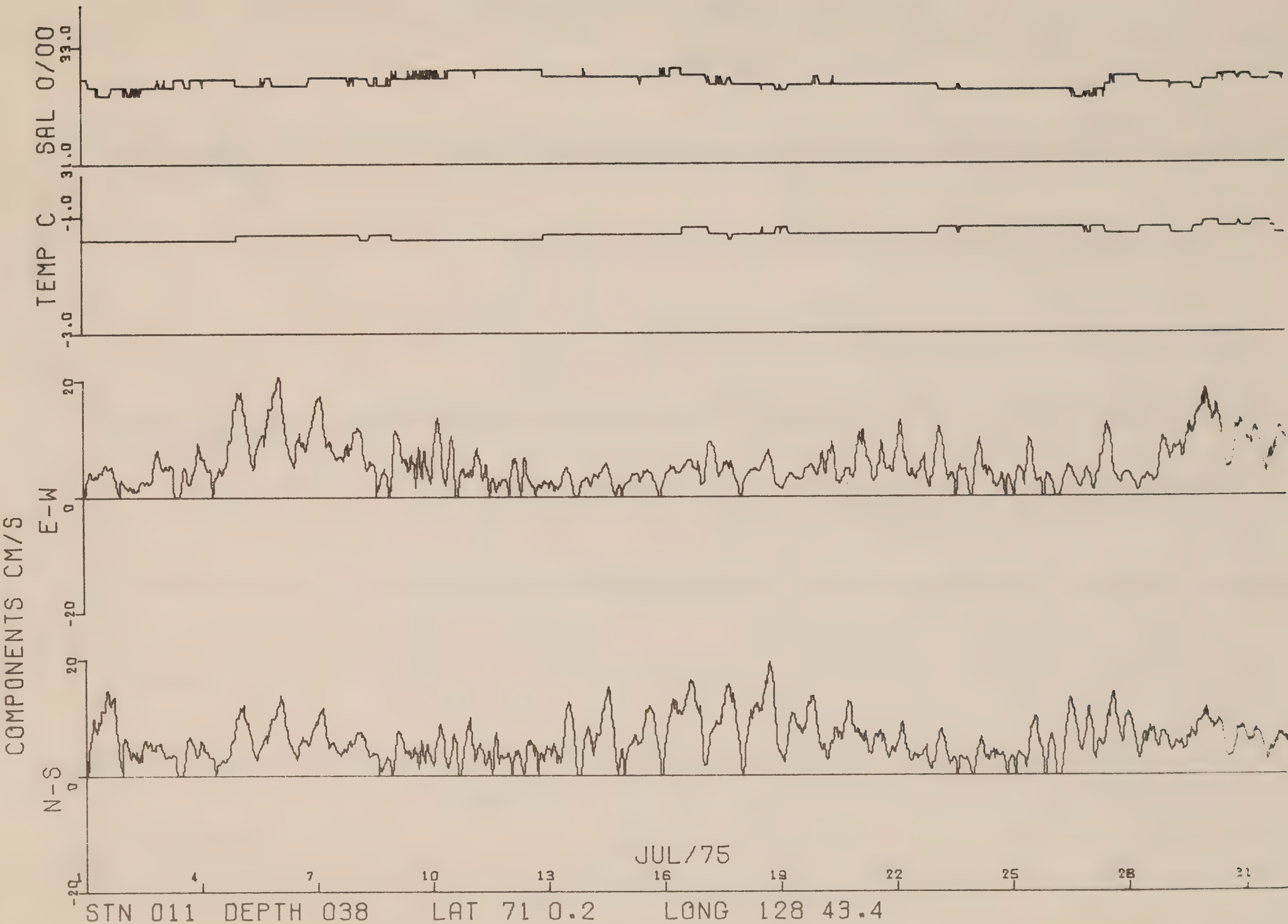
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31.0
TEMP C
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-3.0
COMPONENTS CM/S
E-W
20
0
-20
N-S
20
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-20
JUL/75
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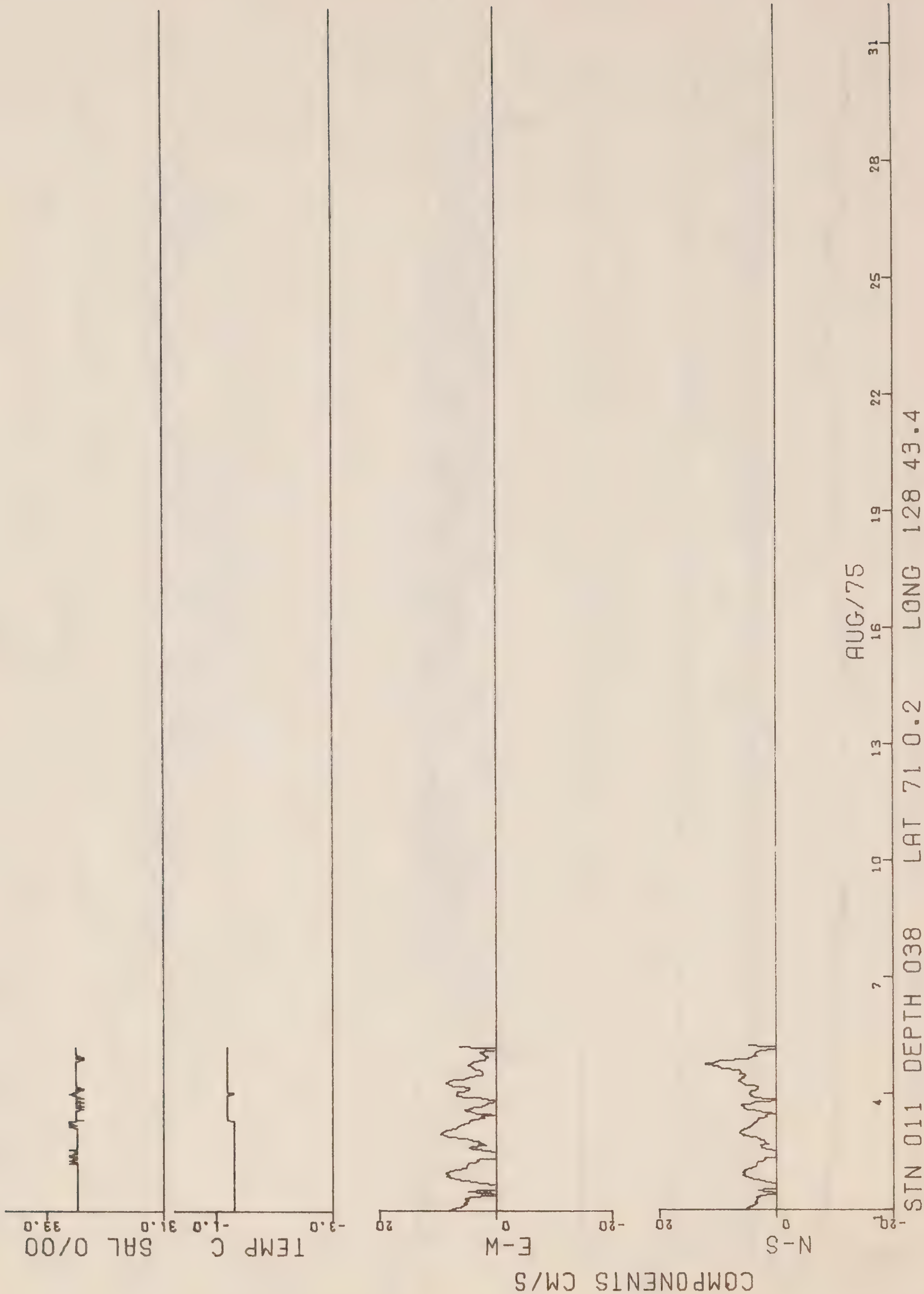
STN 011 DEPTH 038 LAT 71 0.2 LONG 128 43.4



STN 011 DEPTH 038 LAT 71 0.2 LONG 128 43.4
AUG/75
SAL O/OO
33.0
31.0
TEMP C
-1.0
-3.0
COMPONENTS CM/S
E-W
N-S
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0
-20
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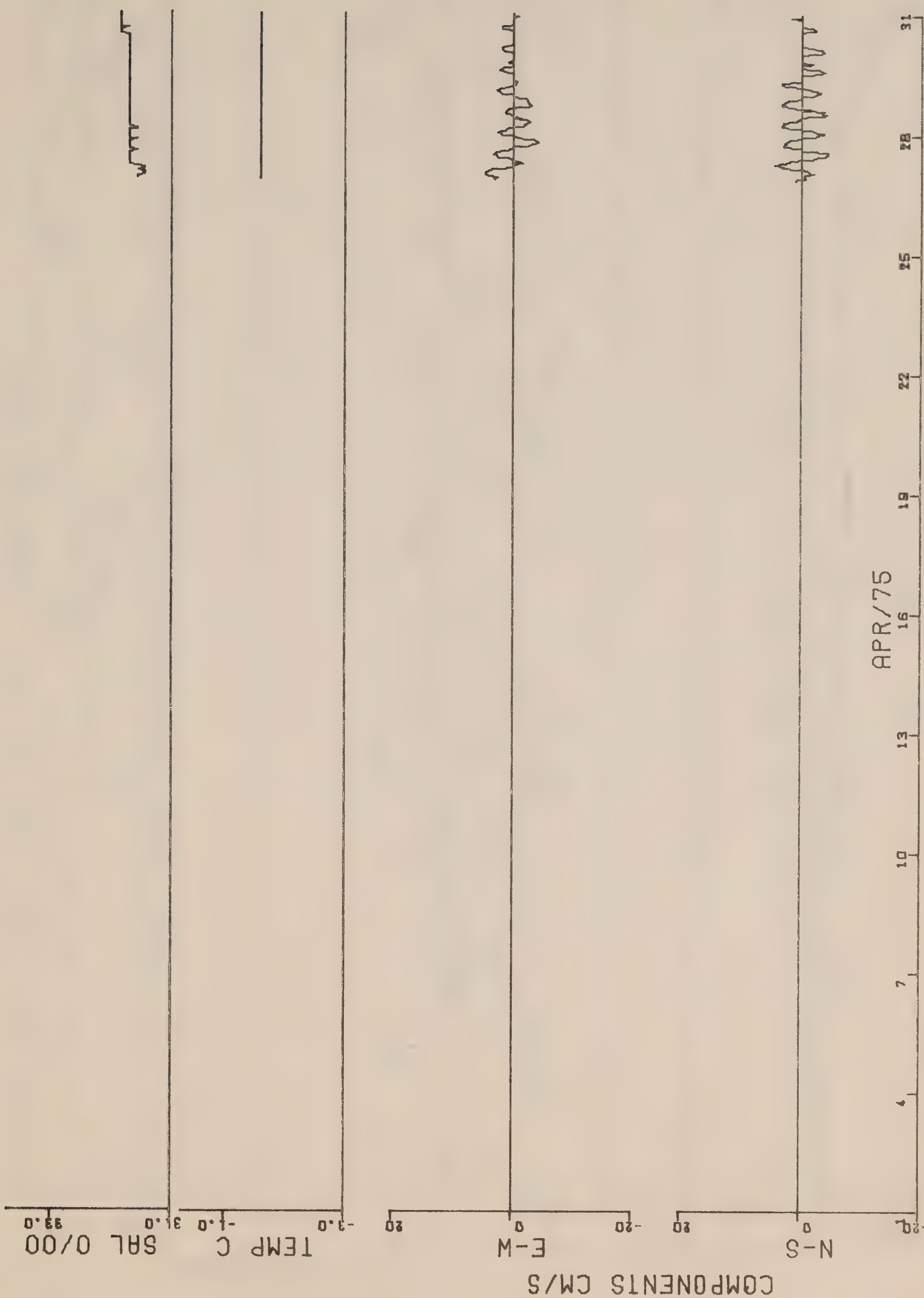
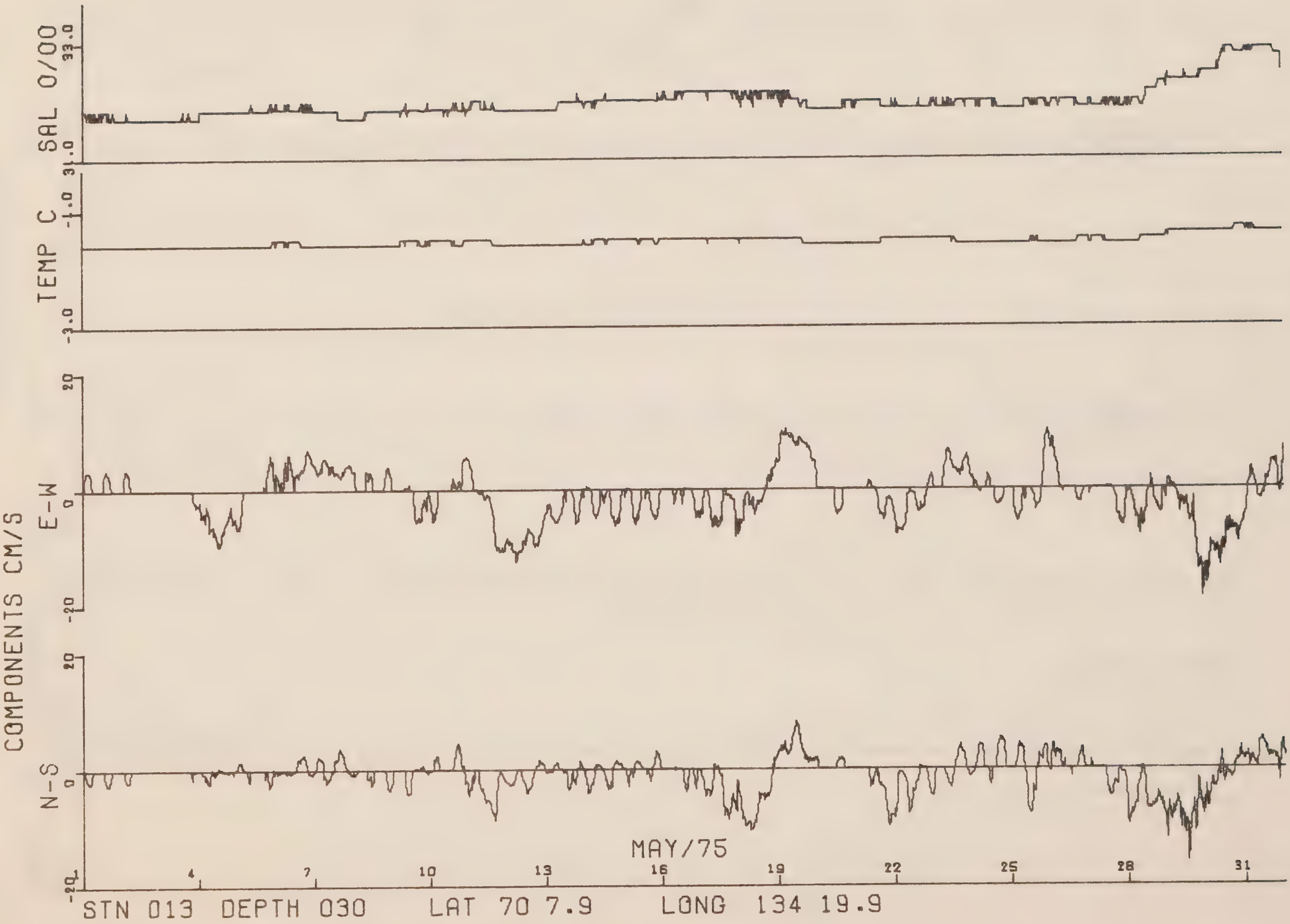

STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9
APR/75
4 7 10 13 16 19 22 25 28 31
COMPONENTS CM/S
N-S
20 0 -20
E-W
20 0 -20
TEMP C
-1.0 -3.0
SAL O/OO
33.0 31.0


SAL O/OO
33.0
31.0
TEMP C
-1.0
-3.0
COMPONENTS CM/S
E-W
20
0
-20
N-S
20
0
-20
1
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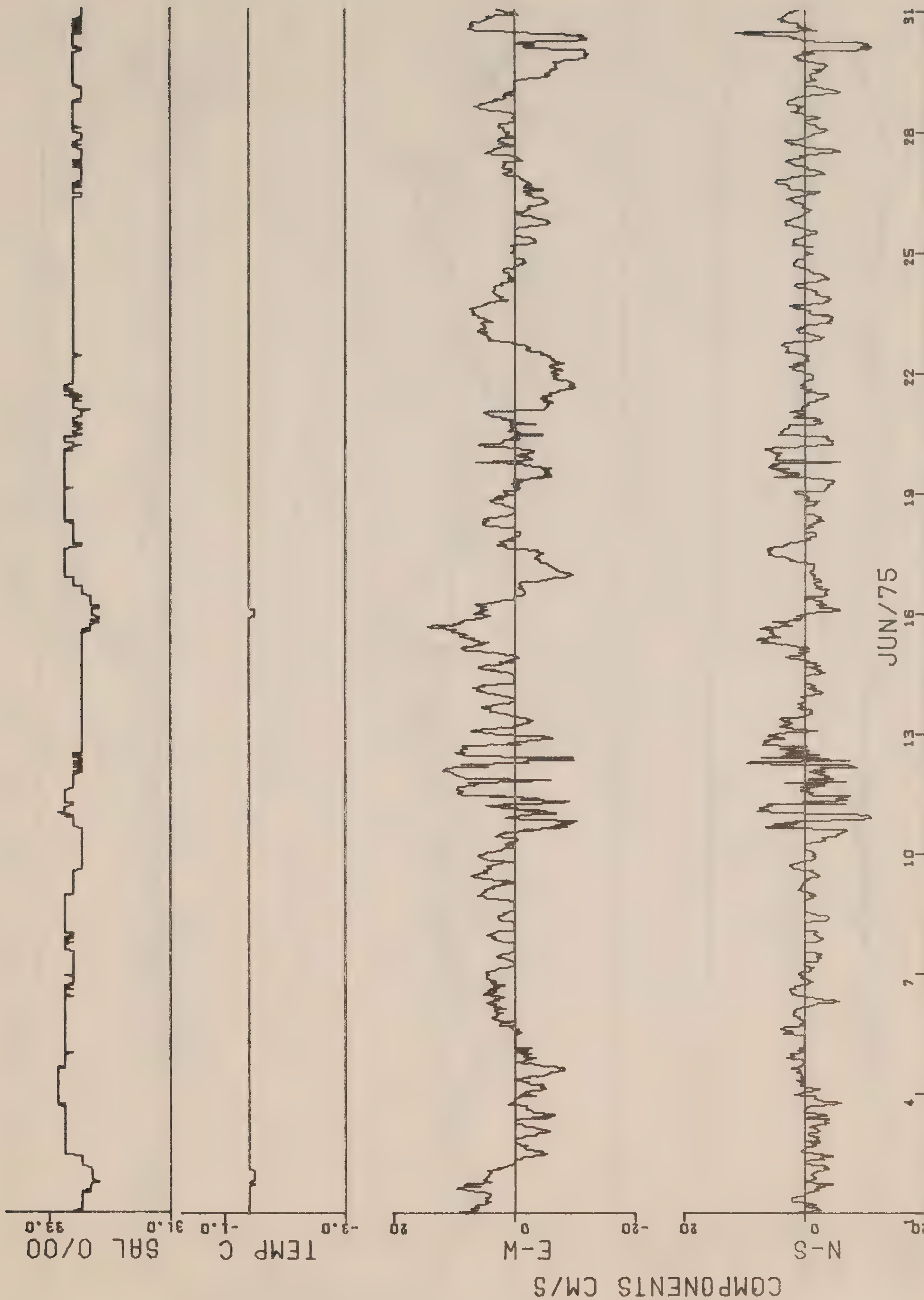
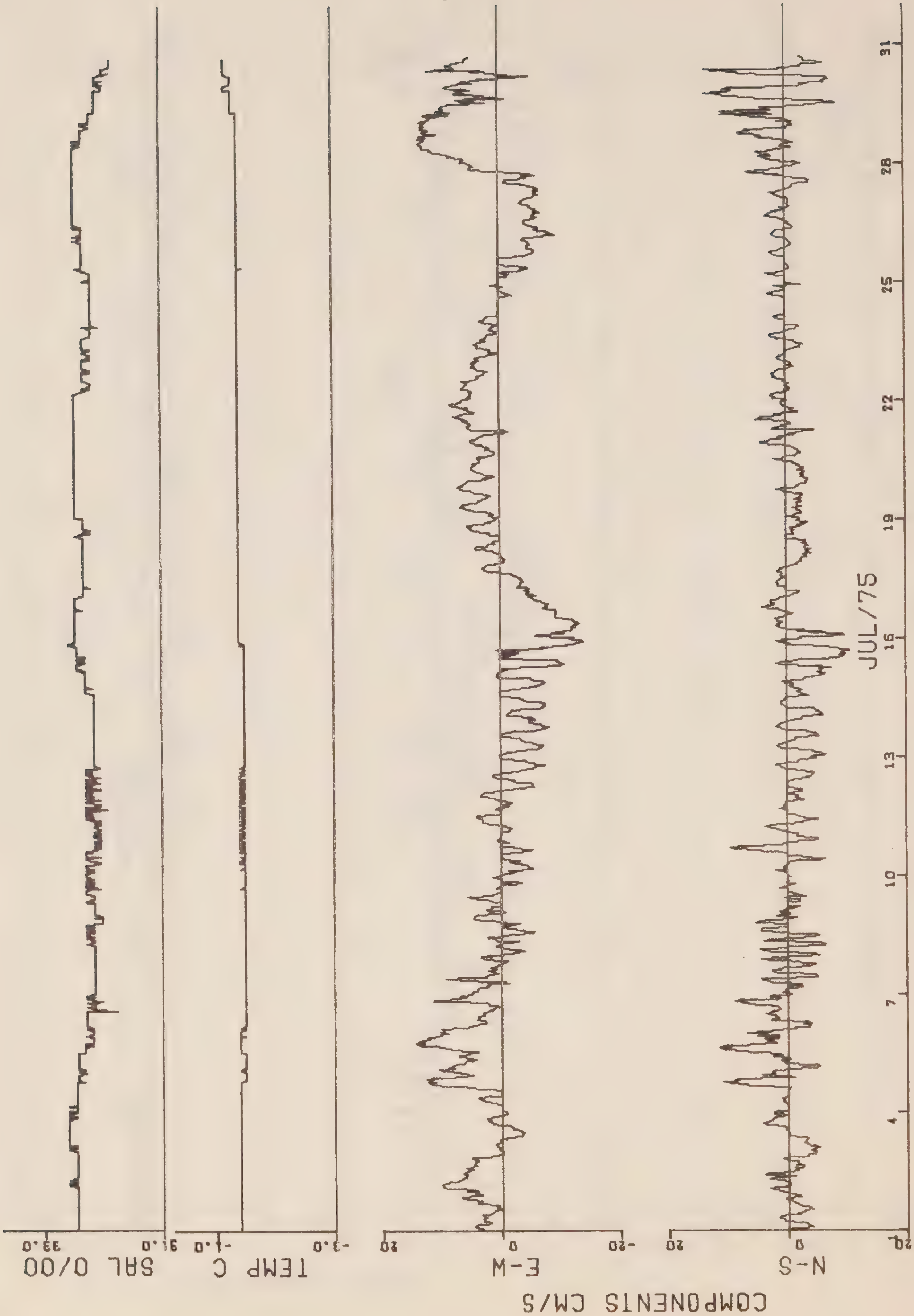
25
28
31
MAY/75
STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9


SAL O/OO
TEMP C
E-W
N-S
COMPONENTS CM/S
JUN/75
STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9


STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9
JUL/75
SAL O/OO
33.0
31.0
TEMP C
-1.0
-3.0
E-W
N-S
COMPONENTS CM/S
20
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-20
4
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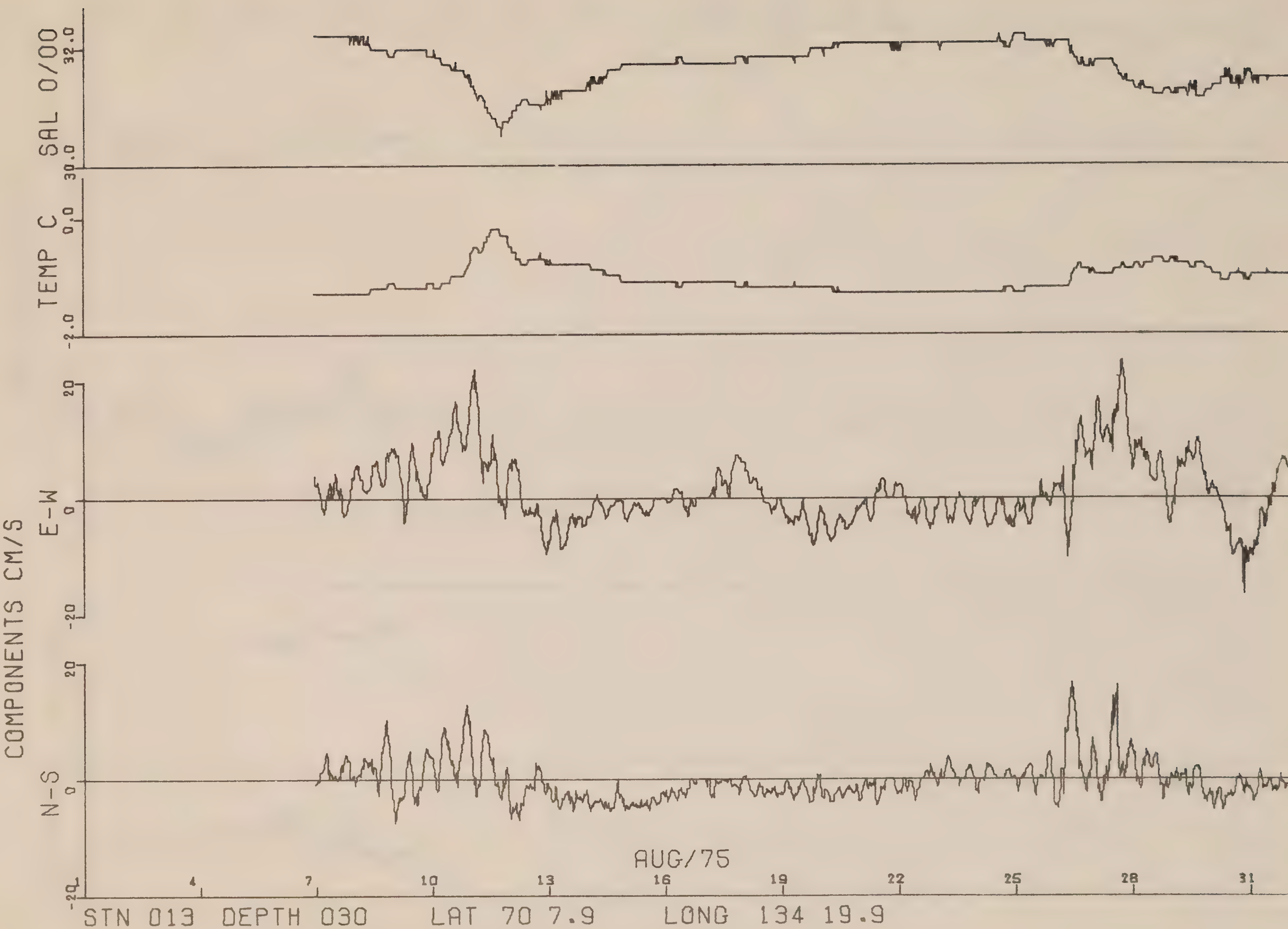
SAL O/OO
32.0
30.0
TEMP C
0.0
-2.0
COMPONENTS CM/S
E-W
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0
-20
N-S
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0
-20
AUG/75
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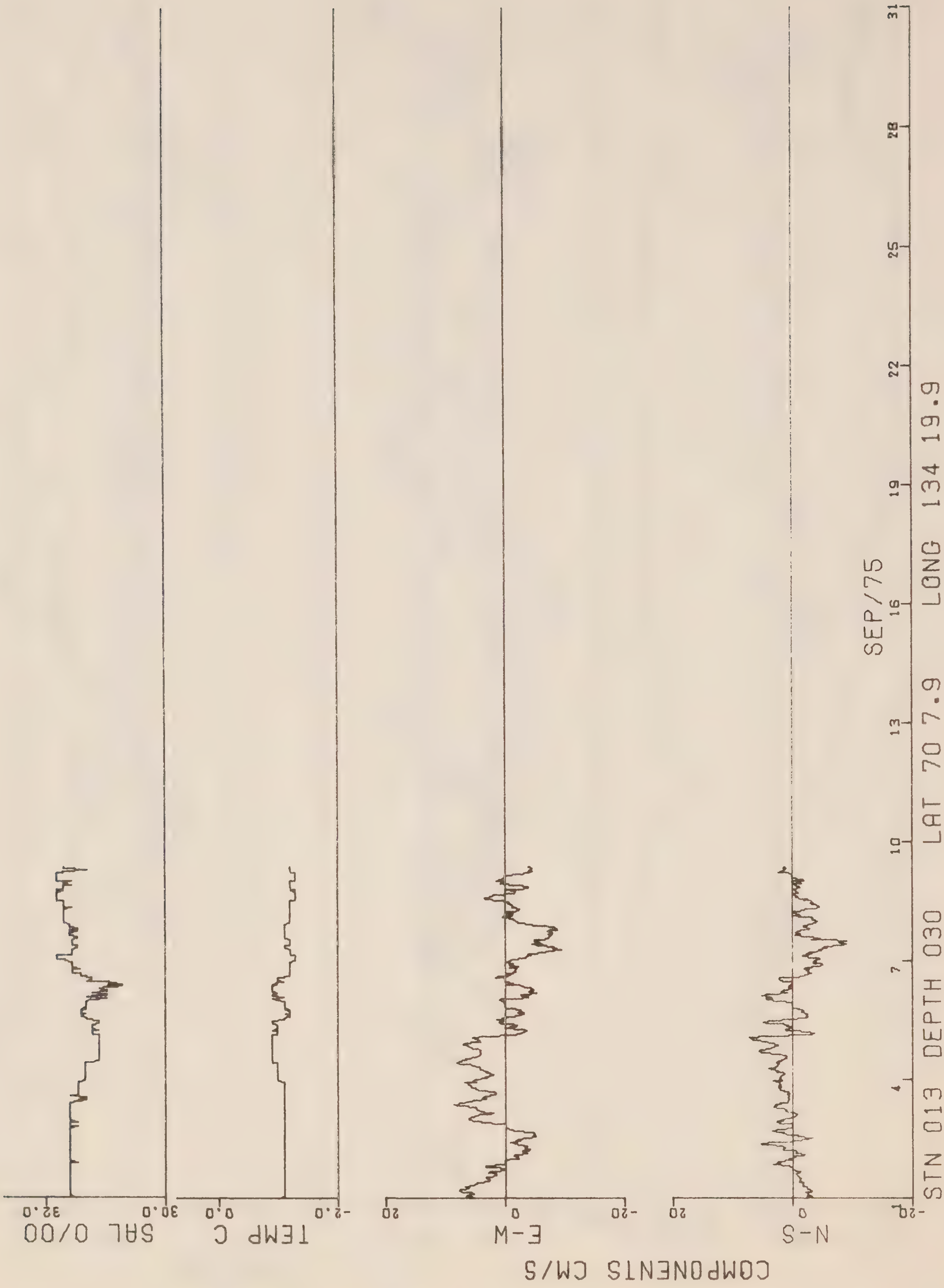
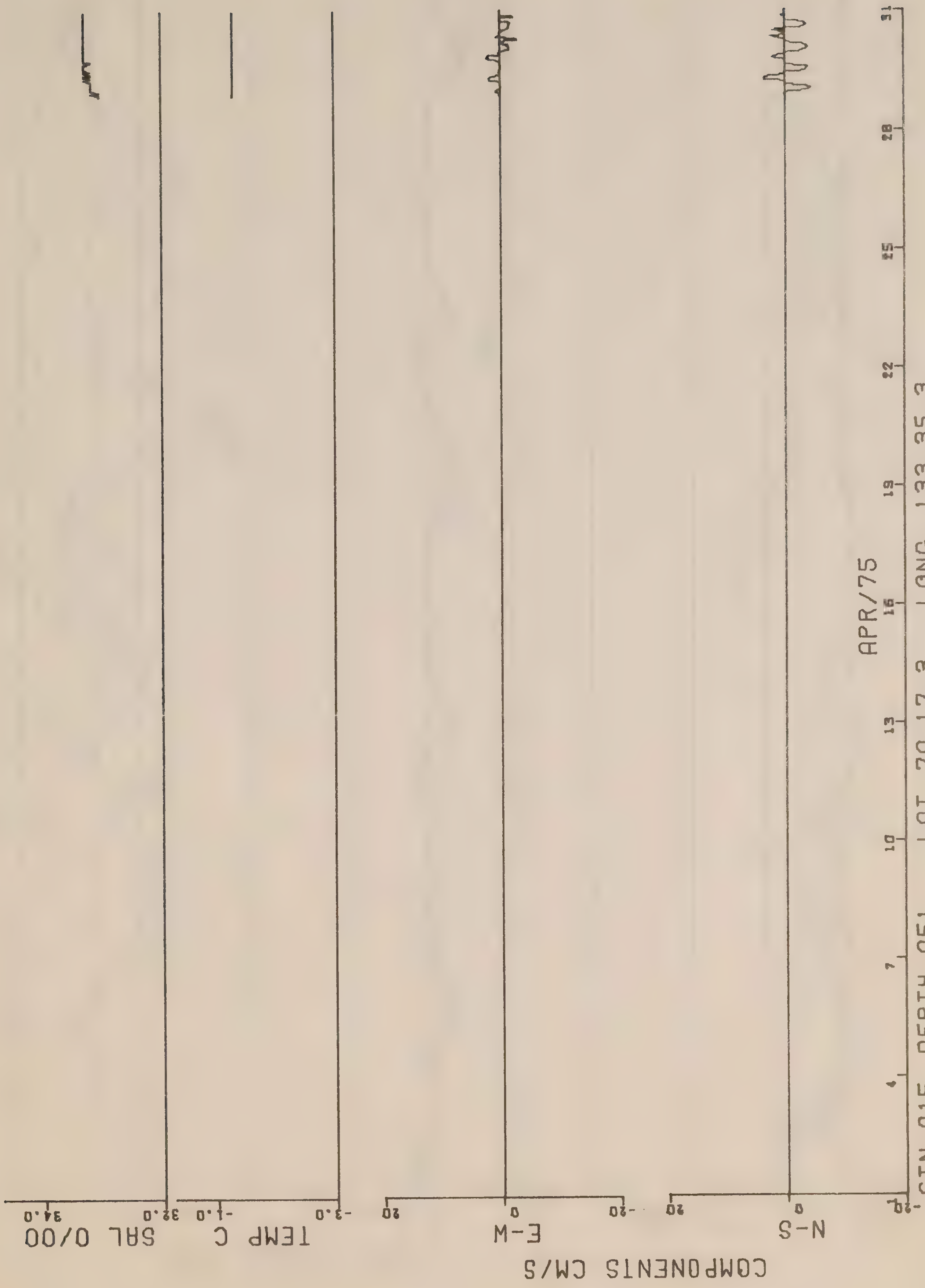
STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9


SAL O/OO
32.0
30.0
TEMP C
0.0
-2.0
E-W
20
0
-20
N-S
20
0
-20
COMPONENTS CM/S
SEP/75
4
7
10
13
16
19
22
25
28
31
STN 013 DEPTH 030 LAT 70 7.9 LONG 134 19.9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32.0
TEMP C
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-3.0
E-W
20
0
-20
N-S
20
0
-20
COMPONENTS CM/S
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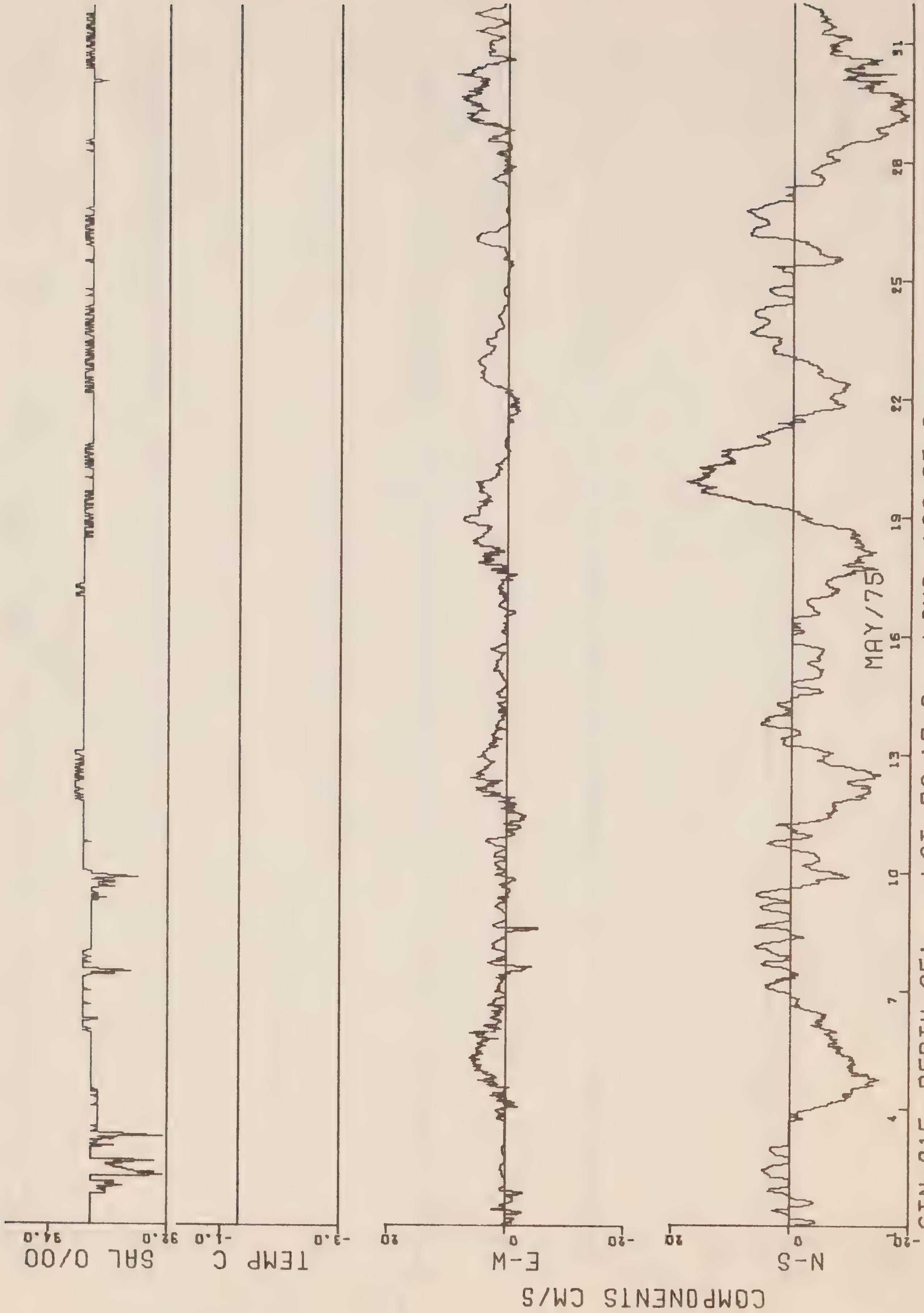
16
19
22
25
28
31
APR/75
STN 015 DEPTH 051 LAT 70 17.3 LONG 133 35.3


STN 015 DEPTH 051 LAT 70 17.3 LONG 133 35.3
MAY/75
4
7
10
13
16
19
22
25
28
31
SAL O/OO
34.0
32.0
TEMP C
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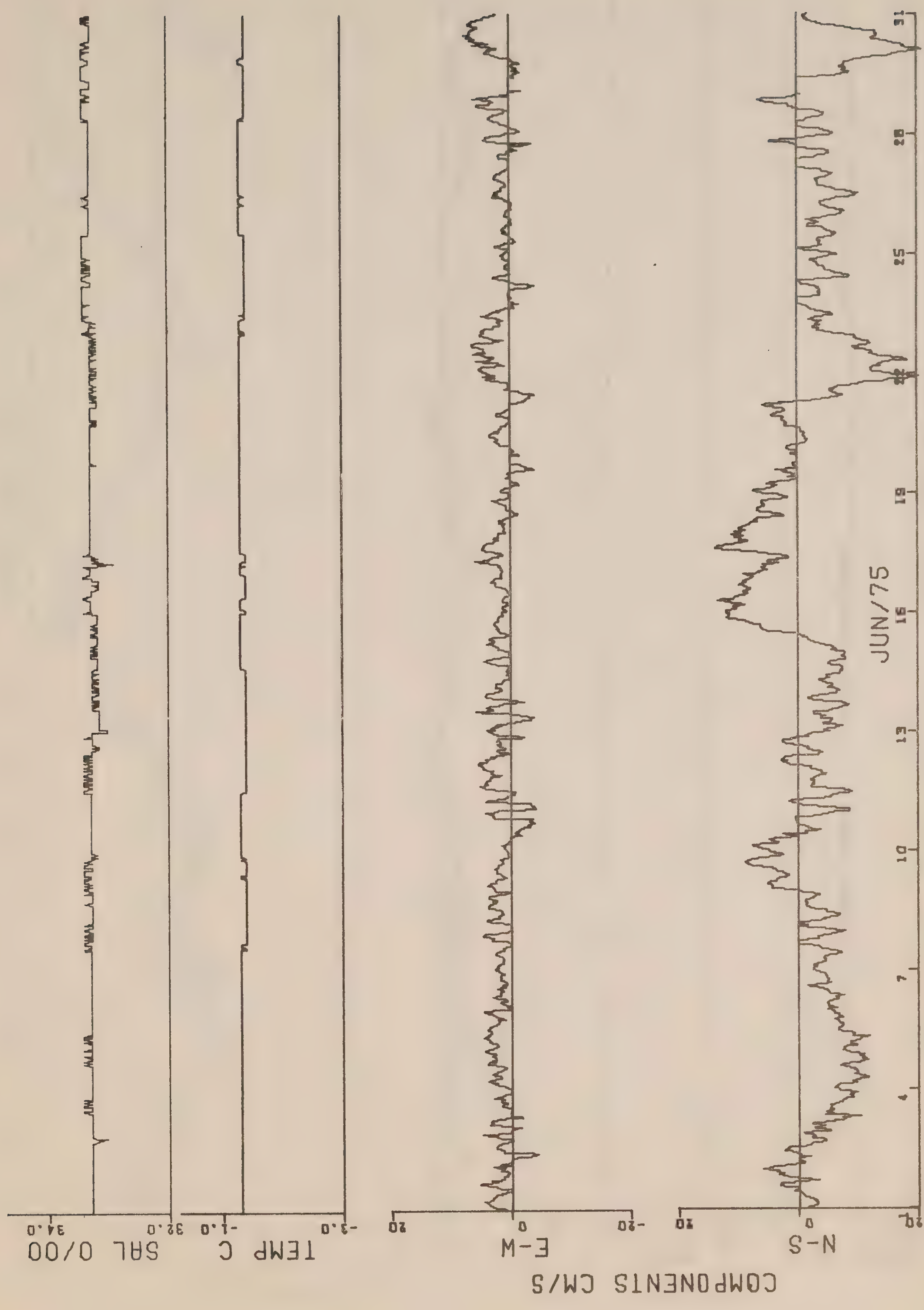
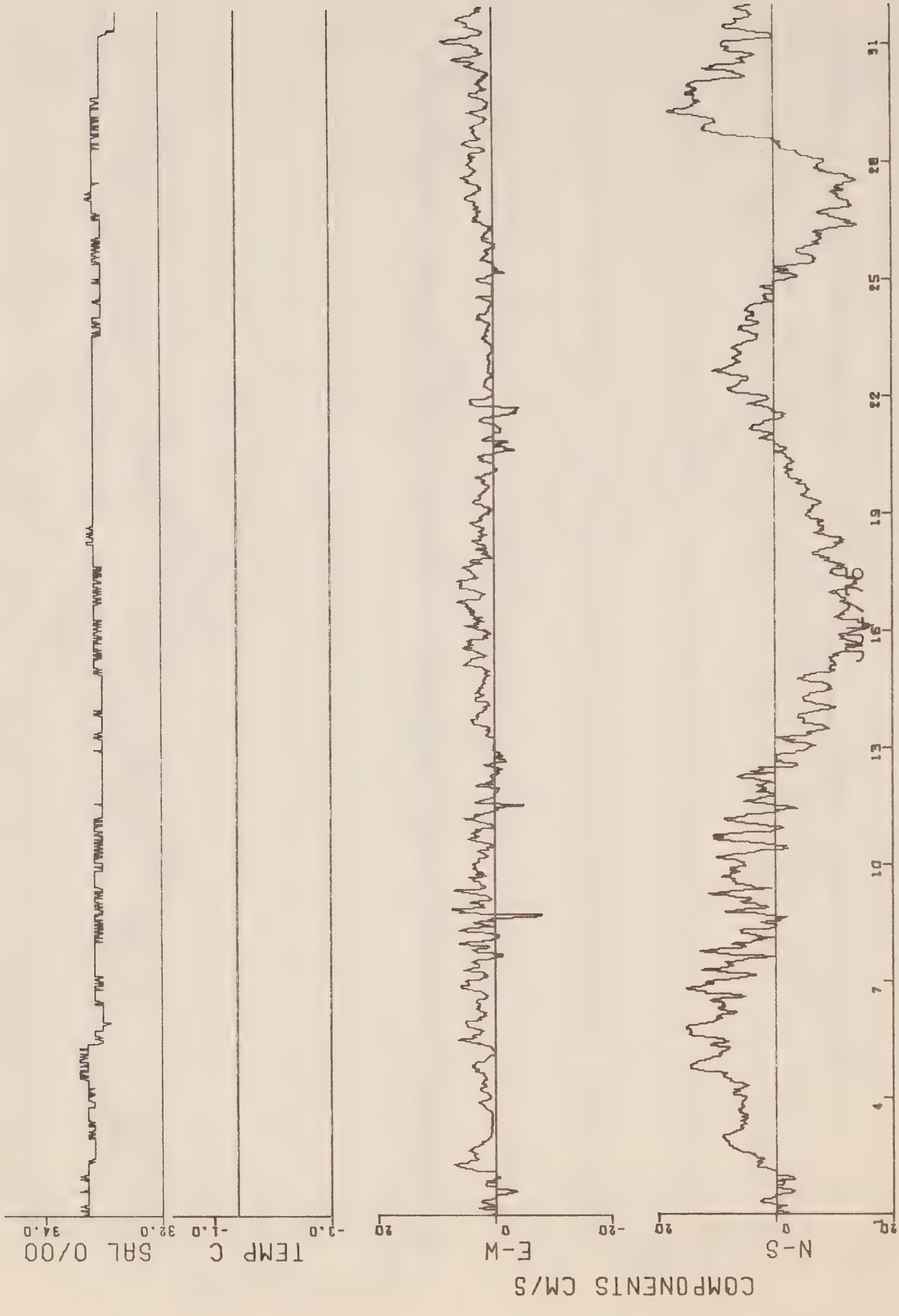
-3.0
E-W
20
0
-20
N-S
20
0
-20
COMPONENTS CM/S


STN 015 DEPTH 051 LAT 70 17.3 LONG 133 35.3
JUN/75
SAL O/OO
TEMP C
E-W
N-S
COMPONENTS CM/S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32.0
TEMP C
-1.0
-3.0
COMPONENTS CM/S
E-W
20
0
-20
N-S
20
0
-20
1
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10
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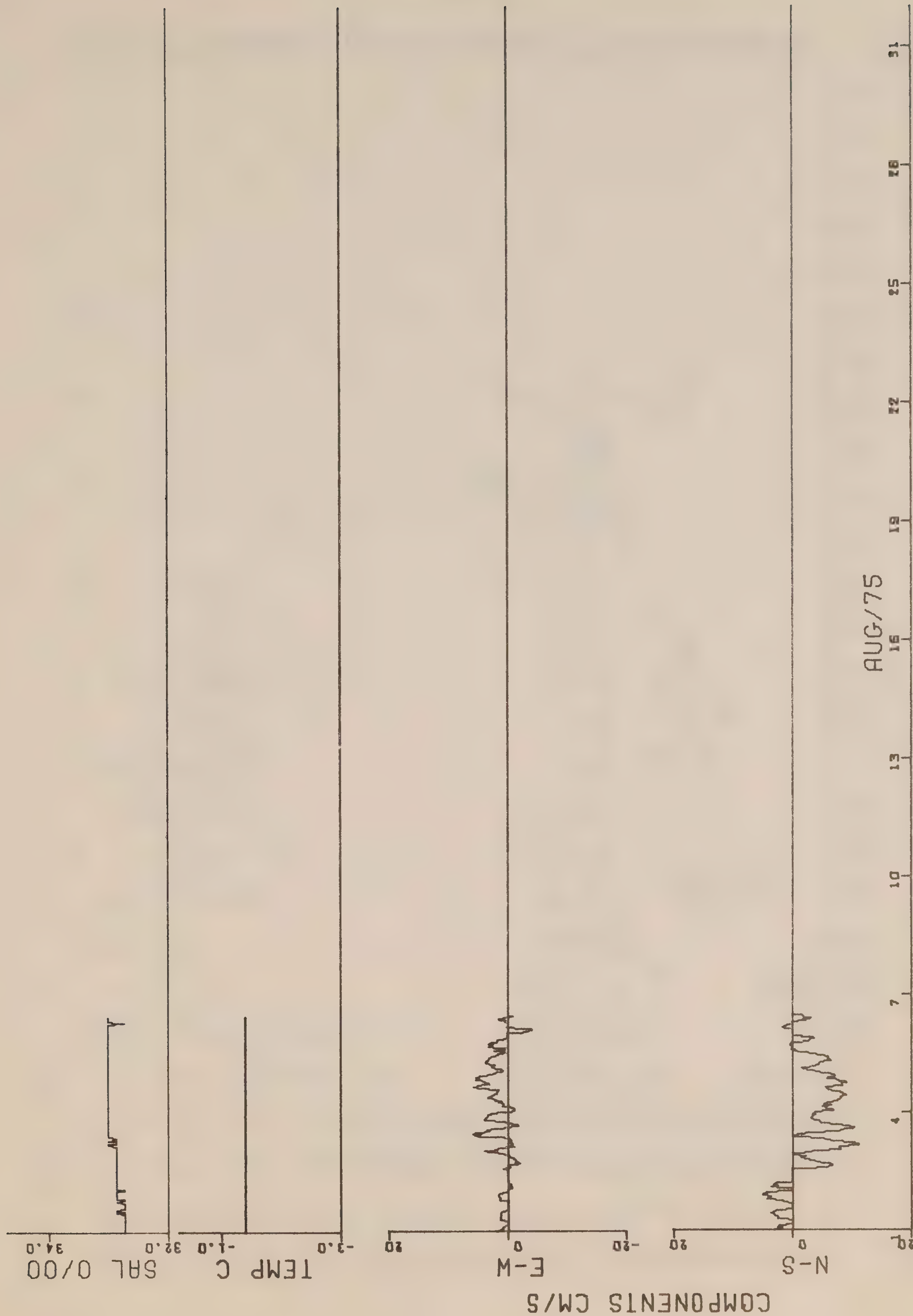
16
19
22
25
28
31
JULY/76
STN 015 DEPTH 051 LAT 70 17.3 LONG 133 35.3


STN 015 DEPTH 051 LAT 70 17.3 LONG 133 35.3
AUG/75
1
4
7
10
13
16
19
22
25
28
31
N-S
E-W
COMPONENTS CM/S
20
0
-20
TEMP C
-1.0
-3.0
SAL O/OO
34.0
32.0

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

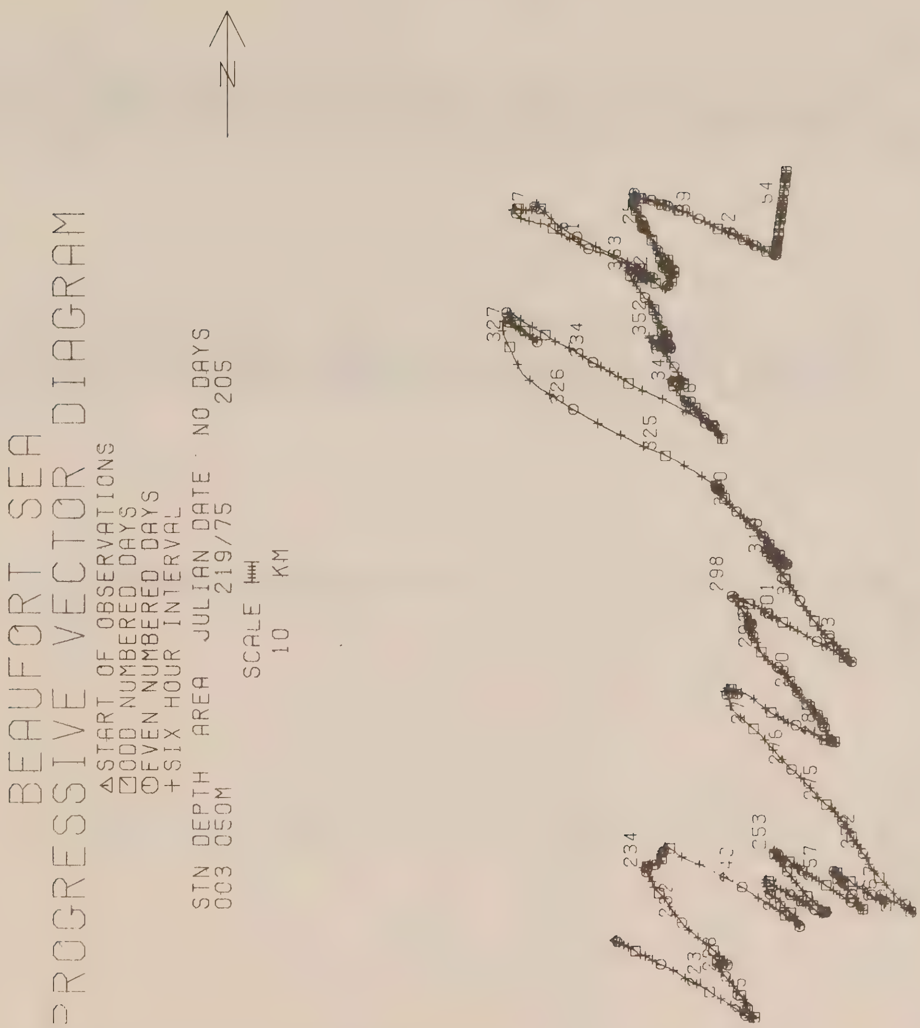
STN 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W LENGTH OF RECORD=191 DAYS

START OF RECORD 00 MN 18 HR 07 DY 08 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	035	053	004	002	002	002																				98
10- 19	020	030	001		002																					53
20- 29	061	039	004		002																					106
30- 39	044	047	001																							92
40- 49	032	033																								65
50- 59	023	017																								40
60- 69	044	028																								72
70- 79	025	031	002																							58
80- 89	037	058	005	002																						102
90- 99	091	125	017	002	004	004																				243
100-109	094	183	045	019	021	009	006	005	001	004	003	004														394
110-119	064	358	120	113	075	059	037	014	009	009	006	015	010	006	001	001										897
120-129	101	322	236	193	089	099	058	042	015	015	007	006	006	001		001										1191
130-139	050	141	075	034	016	009	007	004	005																	341
140-149	044	082	016	012	001																					155
150-159	048	035	007																							90
160-169	029	014																								43
170-179	045	005																								50
180-189	013	005																								18
190-199	018	007																								25
200-209	060	010																								70
210-219	030	007	005																							42
220-229	029	005	002																							36
230-239	019	003	003																							25
240-249	006	004	001	001																						12
250-259	016	014	006	002																						38
260-269	019	004	002	001																						26
270-279	028	011	009	001			001																			50
280-289	014	009	006	002			002		001	002	002	007														45
290-299	025	016	019	007	005		006	007	007	018	008	008	013	007												146
300-309	032	146	094	051	019	021	011	010	017	017	011	005	014	009												457
310-319	021	282	391	102	066	062	033	009	006	004	001															977
320-329	083	597	392	212	045	017	026	003	005	001																1381
330-339	082	427	210	053	006	002	001		014	003		001														799
340-349	064	192	039	008	001	001	001	001	001	002		001														311
350-359	031	081	010	003		001	002			001																129
	1477	3421	1722	820	354	286	191	95	81	76	38	47	43	23	1	2	0	0	0	0	0	0	0	0	0	8677

NUMBER OF ZERO RATES 468


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☒ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
003 050M 219/75 205
SCALE
10 KM
N

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W

STARTING TIME OF ANALYSED DATA 0 MIN 19 HR 7 DAY 8 MON 75 YR

LENGTH OF DATA 190 DAYS 11 HOURS

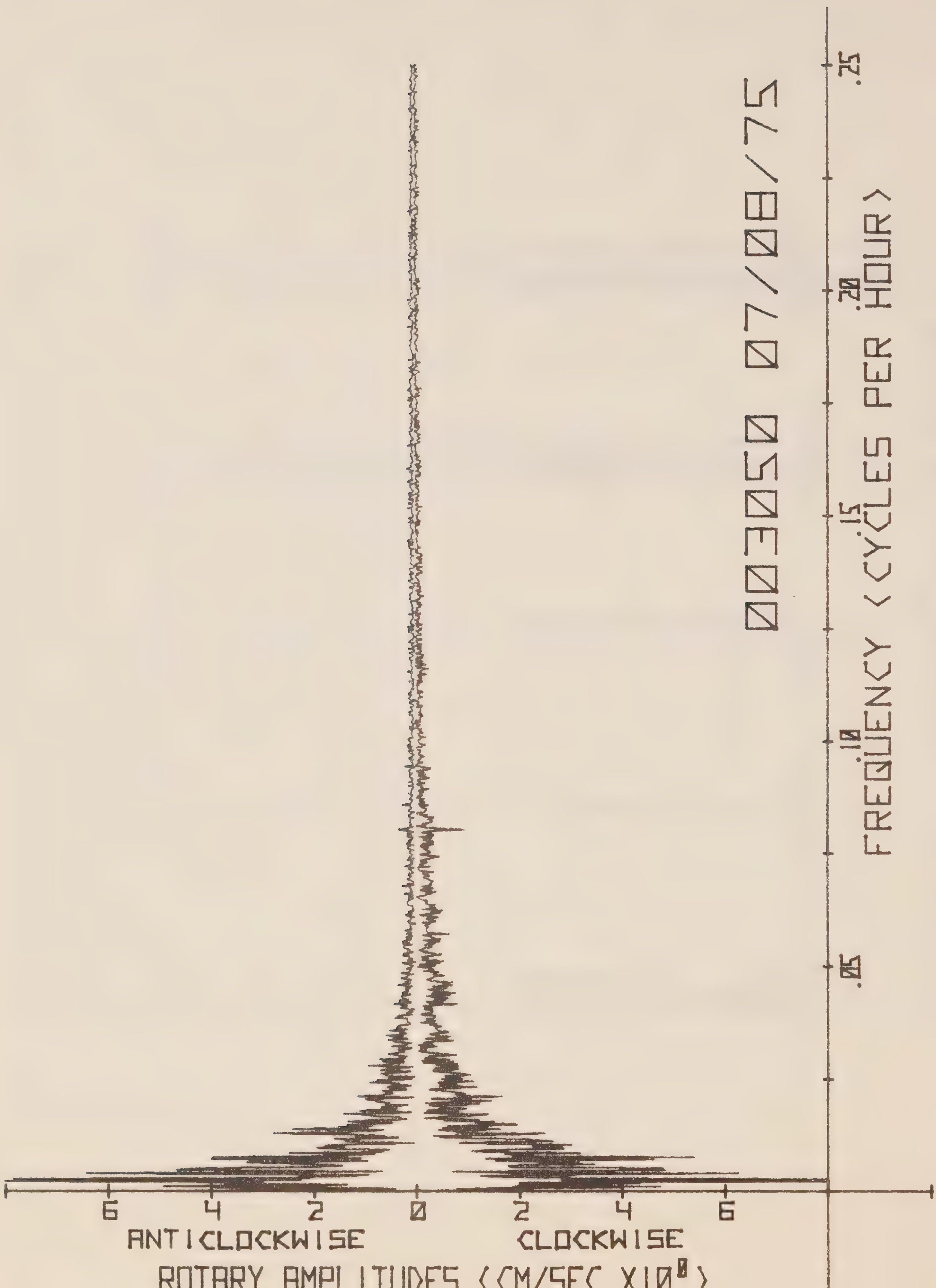
CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	2.2	.0	77.4	.0
MSM	3.2	-.4	144.7	153.5
MM	1.1	.2	158.7	127.1
MSF	2.9	.6	145.8	356.5
MF	4.3	-.1	152.1	256.2
2Q1	.5	-.1	104.0	51.1
SIG1	.5	.0	178.8	196.2
Q1	.1	.0	147.8	112.1
RHO1	.3	-.1	87.4	17.7
O1	.4	.0	151.1	108.1
MP1	.2	.0	129.2	3.3
NO1	.2	-.1	80.1	248.9
P1	.4	-.1	10.7	275.3
K1	.6	-.2	129.2	30.1
PHI1	.2	-.1	174.9	263.5
J1	.4	-.1	107.5	350.5
OO1	.3	-.1	1.4	239.9
MNS2	.1	.0	96.1	228.7
2N2	.2	-.1	89.3	352.3
MU2	.1	-.1	105.4	334.5
N2	.2	-.1	130.4	204.3
NU2	.0	.0	97.1	45.7
M2	.8	-.4	123.3	168.4
LDA2	.1	.0	80.1	332.1
L2	.2	-.1	82.0	324.7
S2	.3	-.2	117.6	190.8
K2	.1	.1	11.2	87.8
KJ2	.1	.0	72.0	298.1
2SM2	.1	.0	46.6	83.5
MO3	.1	.0	132.3	90.1
M3	.1	.0	156.9	11.3
SO3	.1	.0	44.2	180.0
MK3	.0	.0	116.0	87.5
SK3	.1	.0	177.5	106.5
MN4	.1	.0	147.6	346.5
M4	.1	.0	84.3	172.5

CONTINUED

TIDAL CURRENT ELLIPSE

STN 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
SN4	.1	.0	11.8	117.6
MS4	.0	.0	62.2	323.2
MK4	.0	.0	89.2	243.2
S4	.1	.0	70.6	129.1
SK4	.0	.0	114.4	142.6
2MN6	.1	.0	96.6	162.8
M6	.0	.0	116.8	271.8
MSN6	.0	.0	56.7	12.8
2MS6	.0	.0	141.6	14.6
2MK6	.0	.0	24.6	288.0
2SM6	.1	.0	169.9	10.4
MSK6	.1	.0	131.1	121.7
3MN8	.1	.0	83.1	285.3


003050 07/08/75
FREQUENCY <CYCLES PER HOUR>
.05
.10
.15
.20
.25
6 4 2 0 2 4 6
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES <CM/SEC X10^{0}>

DAILY RESIDUALS (CM/SEC)

STATION 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

AUG. 8 1975										
MAJOR COMPONENT	11	15	29	21	5	-4	-4	-9	-5	6
MINOR COMPONENT	-6	-8	-16	-14	-1	5	8	11	9	-2
AUG. 18 1975										
MAJOR COMPONENT	-8	-19	-13	-8	0	5	4	1	4	42
MINOR COMPONENT	8	17	17	12	3	1	4	4	2	-23
AUG. 28 1975										
MAJOR COMPONENT	25	8	-5	-12	0	12	7	8	6	0
MINOR COMPONENT	-17	-7	8	11	7	-8	-4	-5	-1	0
SEPT 7 1975										
MAJOR COMPONENT	-11	-12	-7	2	7	7	14	15	7	-6
MINOR COMPONENT	9	15	10	0	-4	-5	-9	-10	-4	9
SEPT 17 1975										
MAJOR COMPONENT	-8	3	-4	-2	10	13	8	-3	17	-3
MINOR COMPONENT	9	-2	6	1	-6	-8	-7	7	-10	5
SEPT 27 1975										
MAJOR COMPONENT	-15	-10	-7	-5	-9	-20	-22	-16	3	4
MINOR COMPONENT	16	14	10	9	10	21	24	20	3	-3

DAILY RESIDUALS (CM/SEC)

STATION 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

OCT. 7 1975										
MAJOR COMPONENT	20	14	17	4	2	-6	-1	-3	-6	-6
MINOR COMPONENT	-11	-7	-9	-1	0	9	3	5	6	7
OCT. 17 1975										
MAJOR COMPONENT	-5	-7	-10	-5	-2	2	-5	-6	10	11
MINOR COMPONENT	7	8	9	10	6	0	7	9	-5	-6
OCT. 27 1975										
MAJOR COMPONENT	9	20	16	5	-5	-9	-9	-9	-9	-8
MINOR COMPONENT	-5	-11	-9	-3	5	9	10	12	13	12
NOV. 6 1975										
MAJOR COMPONENT	-2	3	4	5	-3	-4	-3	-4	-7	-8
MINOR COMPONENT	4	-2	-1	-5	1	6	5	5	7	7
NOV. 16 1975										
MAJOR COMPONENT	-7	-4	-1	2	-32	-54	-37	-1	10	7
MINOR COMPONENT	8	5	2	-2	19	27	36	15	-5	-6
NOV. 26 1975										
MAJOR COMPONENT	-13	-5	23	28	21	45	10	-5	-1	-5
MINOR COMPONENT	11	6	-13	-16	-12	-23	-9	7	0	5

DAILY RESIDUALS (CM/SEC)

STATION 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

DEC. 6 1975									
MAJOR COMPONENT									
-5	-5	-7	-1	2	4	0	-6	-7	1
MINOR COMPONENT									
6	3	10	3	0	-1	0	10	12	0
DEC. 16 1975									
MAJOR COMPONENT									
-4	-1	7	1	1	0	-3	1	-3	-3
MINOR COMPONENT									
0	3	-3	2	-3	0	7	0	2	8
DEC. 26 1975									
MAJOR COMPONENT									
-2	-5	-9	0	7	1	-2	6	-7	-37
MINOR COMPONENT									
5	7	13	4	-5	0	5	-5	5	18
JAN. 5 1976									
MAJOR COMPONENT									
-21	-3	-9	-2	21	21	40	7	2	-1
MINOR COMPONENT									
16	1	-1	-2	-9	-12	-20	-2	3	5
JAN. 15 1976									
MAJOR COMPONENT									
3	0	-4	0	-1	-2	-2	-1	-3	-4
MINOR COMPONENT									
0	1	6	-3	-2	1	5	4	6	7
JAN. 25 1976									
MAJOR COMPONENT									
-1	0	0	-1	-3	-2	1	-1	4	6
MINOR COMPONENT									
2	-1	1	3	6	5	2	3	-3	-1

DAILY RESIDUALS (CM/SEC)

STATION 003 DEPTH 050 BEAUFORT SEA 69 55.3 N 139 23.3 W
MAJOR COMPONENT 90 MINOR COMPONENT 0 DEGREES

FEB. 4 1976										
MAJOR COMPONENT										
	6	3	7	12	11	8	7	7	7	5
MINOR COMPONENT										
	-3	-1	-3	-5	-6	-3	-3	-3	-3	-3
FEB. 14 1976										
MAJOR COMPONENT										
	0	0	0	0	1	1	0	0	0	0
MINOR COMPONENT										
	2	2	2	3	4	5	4	3	3	1
FEB. 24 1976										
MAJOR COMPONENT										
	0	1	1	0	0					
MINOR COMPONENT										
	3	5	6	3	4					

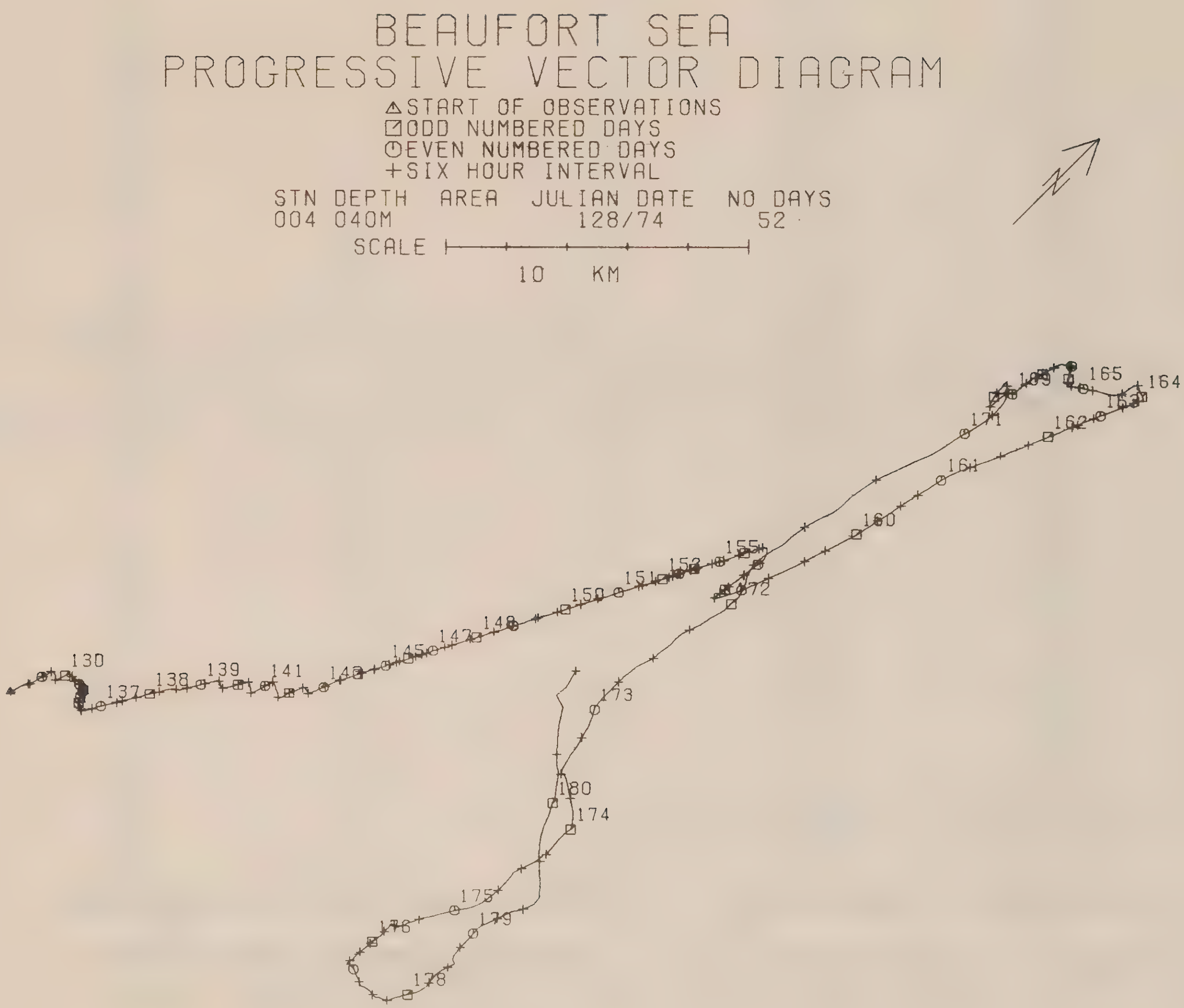
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 004 DEPTH 040 BEAUFORT SEA 69 41.9 N 137 9.2 W LENGTH OF RECORD= 53 DAYS
START OF RECORD 30 MN 23 HR 08 DY 05 MO 74 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	007	001																								8
10- 19	105	039																								144
20- 29	376	044																								420
30- 39	176	007																								183
40- 49	011																									11
50- 59	014																									14
60- 69	003																									3
70- 79	008																									8
80- 89	008																									8
90- 99	010	001																								11
100-109	020																									20
110-119	033																									33
120-129	024	009																								33
130-139	010	001																								11
140-149	006	006																								12
150-159	017	007																								24
160-169	008	017																								25
170-179	010	024	001																							35
180-189	094	033	010	001																						138
190-199	029	030	009	002	001																					71
200-209	021	010	003	002	002																					38
210-219	008	016																								24
220-229	005																									5
230-239	026	004			001																					31
240-249	007	002																								9
250-259	005																									5
260-269																										0
270-279	001																									1
280-289																										0
290-299	011	001																								12
300-309	001	005																								6
310-319	001	007	007																							15
320-329	013	006	002	001																						22
330-339	005	003	002	002																						12
340-349	011	001	002	002																						16
350-359	028	003		001																						32
		277		11		0		0		0		0		0		0		0		0		0		0		1440
	1112		36		4		0		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 1081


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
004 040M 128/74 52
SCALE
10 KM
130
137
138
139
141
145
147
148
150
151
155
160
162
164
165
171
173
174
175
178
180

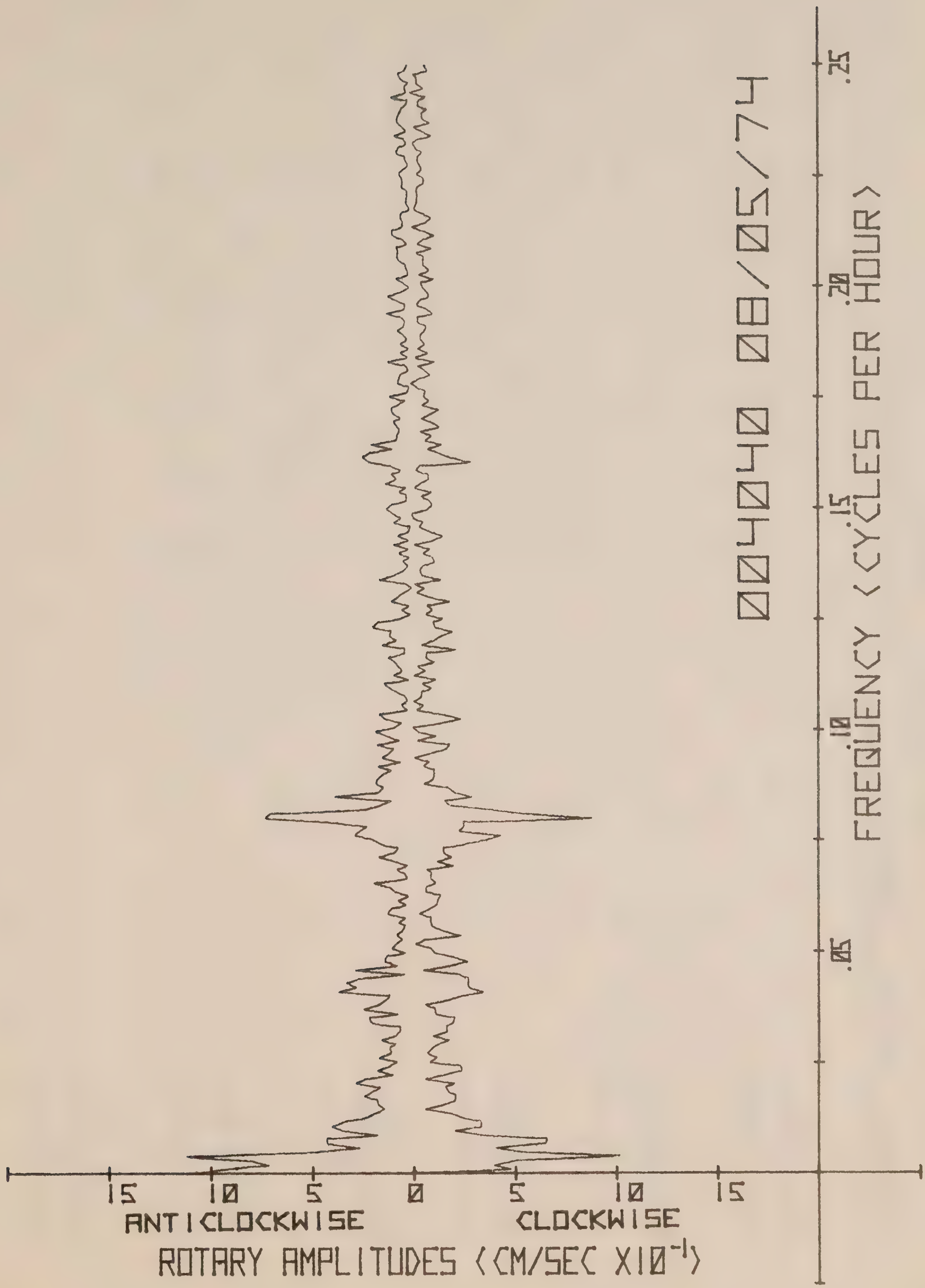
TIDAL CURRENT ELLIPSE

STN 004 DEPTH 040 BEAUFORT SEA 69 41.9 N 137 9.2 W

STARTING TIME OF ANALYSED DATA 0 MIN 1 HR 9 DAY 5 MON 74 YR

LENGTH OF DATA 52 DAYS 10 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	.4	.0	48.2	.0
MM	1.4	-.1	86.2	156.7
MSF	1.3	.2	99.2	234.5
2Q1	.1	.0	80.7	118.8
Q1	.1	-.1	61.2	310.9
O1	.3	.0	174.3	217.0
NO1	.1	.0	169.8	106.6
K1	.3	.2	110.7	183.3
J1	.3	.0	61.9	97.8
OO1	.1	.0	100.6	39.9
MNS2	.3	.0	87.1	232.2
MU2	.1	.0	103.7	75.9
N2	.3	.0	89.4	282.8
M2	.9	.1	80.5	234.7
L2	.2	.0	42.6	54.4
S2	.2	-.1	85.8	296.4
KJ2	.2	.0	70.4	225.3
2SM2	.1	.0	76.2	303.8
MO3	.0	.0	47.1	315.0
M3	.1	.0	44.4	28.5
MK3	.2	-.1	120.3	248.3
SK3	.1	.0	14.8	4.2
MN4	.1	.0	63.2	190.2
M4	.2	.0	49.1	82.9
SN4	.1	.0	100.9	354.3
MS4	.2	.1	38.9	136.5
S4	.1	.0	34.7	116.9
2MN6	.1	.0	72.5	92.2
M6	.1	.0	28.8	333.7
MSN6	.1	.0	151.8	107.1
2MS6	.1	.0	7.6	289.7
2SM6	.0	.0	116.5	317.8
3MN8	.0	.0	46.7	63.4
M8	.0	.0	57.7	335.6
3MS8	.0	.0	58.3	91.7
M12	.1	.0	19.0	299.1


004040 08/05/74
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
15 10 5 0 5 10 15
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10⁻¹)

DAILY RESIDUALS (CM/SEC)

STATION 004 DEPTH 040 BEAUFORT SEA 69 41.9 N 137 9.2 W
MAJOR COMPONENT 0 MINOR COMPONENT 270 DEGREES

MAY 9 1974									
MAJOR COMPONENT									
1	1	0	0	0	0	0	0	1	2
MINOR COMPONENT									
0	-1	-1	0	0	0	0	0	-1	-1
MAY 19 1974									
MAJOR COMPONENT									
2	1	1	0	1	1	1	1	1	2
MINOR COMPONENT									
-1	-1	-1	-1	-1	-1	-1	0	0	-1
MAY 29 1974									
MAJOR COMPONENT									
1	2	2	2	1	1	1	1	0	-2
MINOR COMPONENT									
-1	-1	-1	-1	0	0	0	0	-1	0
JUNE 8 1974									
MAJOR COMPONENT									
0	5	4	4	2	2	-1	0	0	-1
MINOR COMPONENT									
0	-2	-1	-2	-1	-1	2	1	0	1
JUNE 18 1974									
MAJOR COMPONENT									
-1	-1	-2	-11	-7	-4	-5	-3	-1	1
MINOR COMPONENT									
0	0	0	2	1	-3	1	1	0	-2
JUNE 28 1974									
MAJOR COMPONENT									
3	6								
MINOR COMPONENT									
0	1								

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

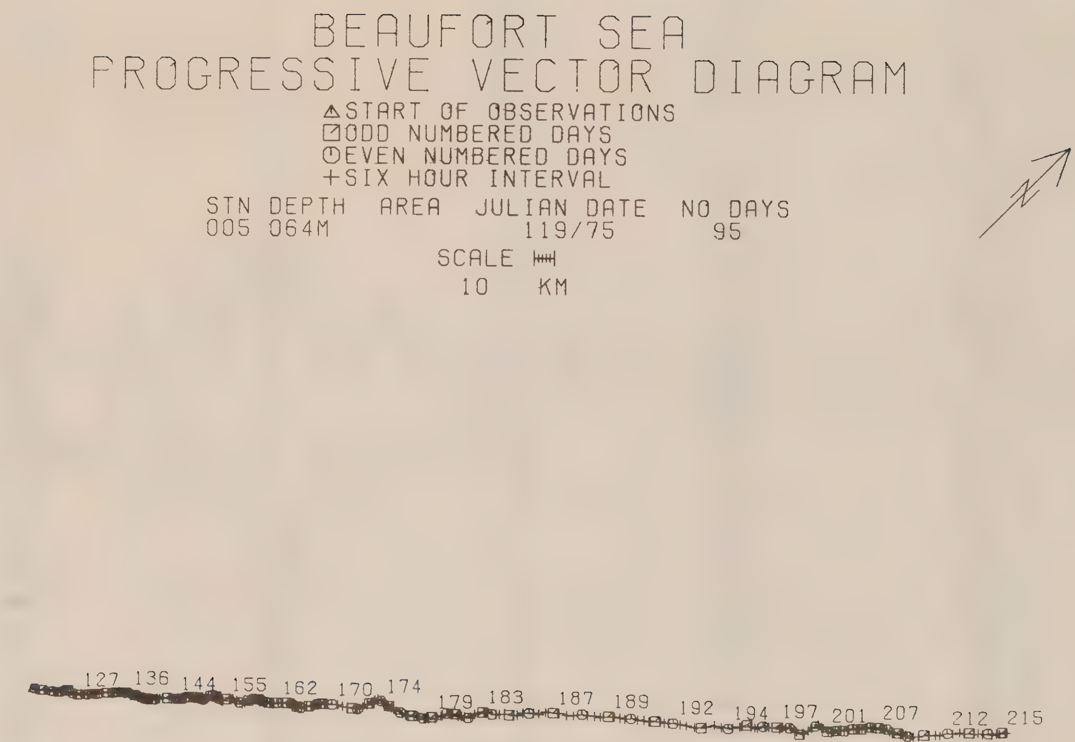
STN 005 DEPTH 064 BEAUFORT SEA 70 24.1 N 136 45.7 W LENGTH OF RECORD= 96 DAYS

START OF RECORD 00 MN 20 HR 29 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9																										0
10- 19	287	436	089	025																						837
20- 29	129	205	056	031	010																					433
30- 39	072	148	089	057	011																					377
40- 49	059	113	094	063	005																					334
50- 59	062	145	130	041	003																					381
60- 69	088	151	070	029	004																					342
70- 79	328	344	074	011	003																					760
80- 89	252	224	053	001																						530
90- 99																										0
100-109																										0
110-119																										0
120-129																										0
130-139																										0
140-149																										0
150-159																										0
160-169																										0
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
240-249																										0
250-259																										0
260-269																										0
270-279																										0
280-289																										0
290-299																										0
300-309																										0
310-319																										0
320-329																										0
330-339																										0
340-349																										0
350-359																										0
		1766		258		0		0		0		0		0		0		0		0		0		0		3994
	1277		657		36		0		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 607


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
005 064M 119/75 95
SCALE
10 KM
127 136 144 155 162 170 174 179 183 187 189 192 194 197 201 207 212 215

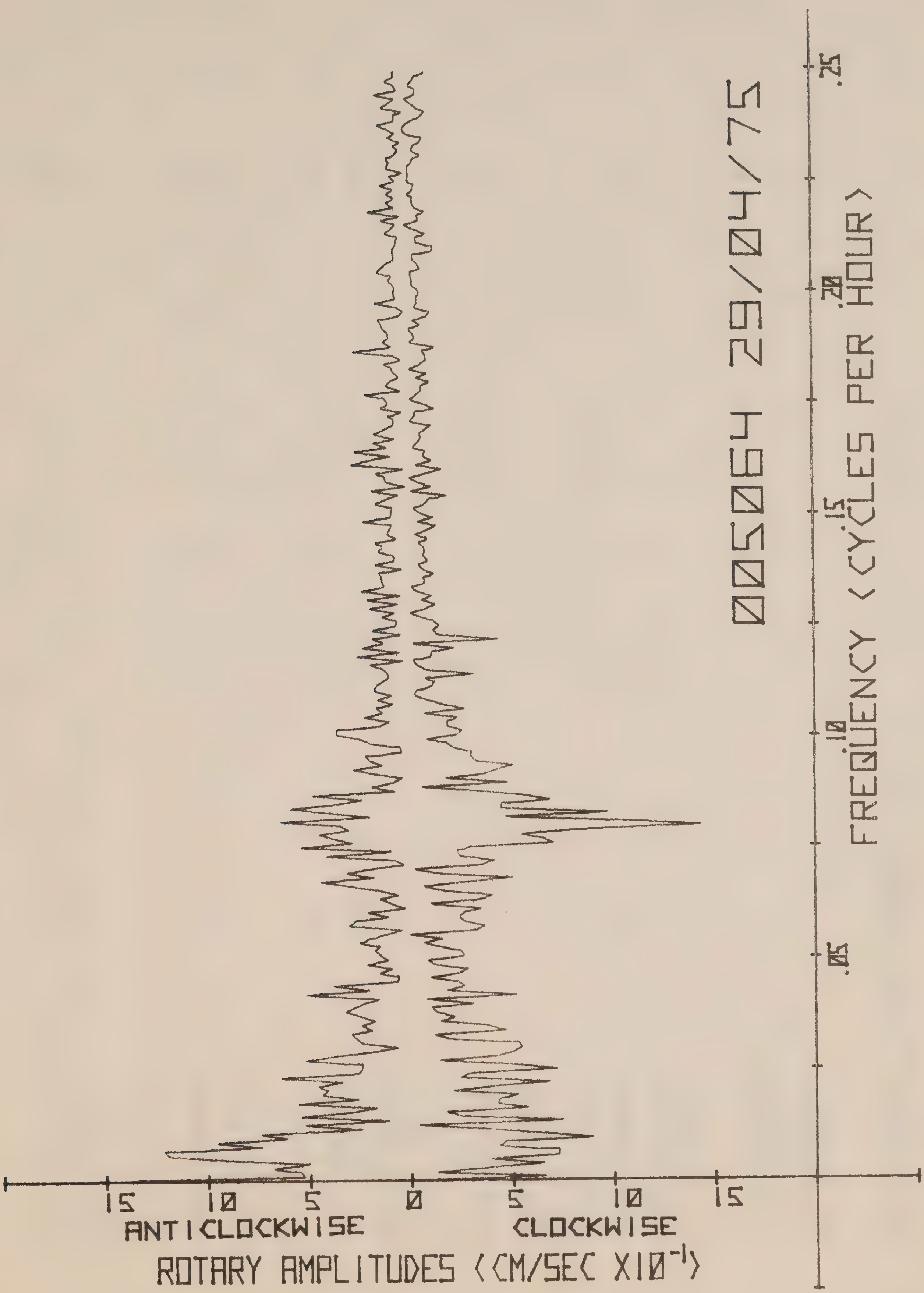
TIDAL CURRENT ELLIPSE

STN 005 DEPTH 064 BEAUFORT SEA 70 24.1 N 136 45.7 W

STARTING TIME OF ANALYSED DATA 0 MIN 21 HR 29 DAY 4 MON 75 YR

LENGTH OF DATA 95 DAYS 18 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	6.0	.0	42.7	.0
MM	1.4	-.1	42.5	294.2
MSF	.4	-.2	68.9	280.1
2Q1	.5	-.1	88.0	274.7
Q1	.3	-.2	70.5	254.0
O1	.3	-.1	146.3	134.3
NO1	.3	.0	110.4	169.0
K1	.4	-.1	71.6	145.4
J1	.3	.1	66.6	95.6
OO1	.2	-.1	24.3	274.7
MNS2	.5	-.3	75.1	236.4
MU2	.7	.0	56.1	325.9
N2	.4	-.1	106.7	83.4
M2	1.5	-.4	124.5	202.8
L2	.2	-.1	134.6	264.3
S2	1.0	-.3	82.7	276.9
KJ2	.5	.0	2.4	289.9
2SM2	.1	.0	35.3	2.7
MO3	.2	.0	19.8	181.1
M3	.1	-.1	50.2	55.9
MK3	.2	-.1	169.1	273.5
SK3	.1	.0	94.4	233.8
MN4	.1	.0	73.6	15.0
M4	.2	.1	30.7	50.5
SN4	.2	.0	96.1	163.7
MS4	.2	.1	139.4	2.3
S4	.0	.0	71.4	145.5
2MN6	.1	.0	137.7	7.4
M6	.1	.0	63.1	186.2
MSN6	.0	.0	161.7	333.8
2MS6	.0	.0	71.0	80.3
2SM6	.1	.0	96.6	222.6
3MN8	.0	.0	27.4	358.3
M8	.0	.0	80.2	223.8
3MS8	.0	.0	156.3	326.3
M12	.0	.0	16.8	35.7


005064 29/04/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
15 10 5 0 5 10 15
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10⁻¹)

DAILY RESIDUALS (CM/SEC)

STATION 005 DEPTH 064 BEAUFORT SEA 70 24.1 N 136 45.7 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 30 1975									
MAJOR COMPONENT									
4	6	4	4	2	2	4	5	3	4
MINOR COMPONENT									
-1	-1	0	1	0	-2	-1	0	0	0
MAY 10 1975									
MAJOR COMPONENT									
5	4	2	4	2	2	4	4	3	1
MINOR COMPONENT									
1	0	0	0	0	0	-2	-1	-1	0
MAY 20 1975									
MAJOR COMPONENT									
2	2	7	5	3	3	2	3	2	3
MINOR COMPONENT									
0	0	1	0	0	1	1	0	0	-1
MAY 30 1975									
MAJOR COMPONENT									
5	2	2	1	4	8	5	3	3	2
MINOR COMPONENT									
2	1	-1	-1	-1	-1	1	1	0	-1
JUNE 9 1975									
MAJOR COMPONENT									
4	4	5	3	3	2	5	4	3	6
MINOR COMPONENT									
-1	0	0	-1	-2	-1	1	1	0	-1
JUNE 19 1975									
MAJOR COMPONENT									
12	4	7	7	5	6	7	7	5	9
MINOR COMPONENT									
-2	0	3	2	-3	-4	-2	-1	0	2

DAILY RESIDUALS (CM/SEC)

STATION 005 DEPTH 064 BEAUFORT SEA 70 24.1 N 136 45.7 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 29 1975										
MAJOR COMPONENT	5	7	8	5	10	12	14	17	15	14
MINOR COMPONENT	0	-2	3	-1	0	1	0	-1	-1	-1
JULY 9 1975										
MAJOR COMPONENT	14	10	17	16	11	9	8	7	6	9
MINOR COMPONENT	-1	-1	-3	0	2	-1	-1	-1	-3	4
JULY 19 1975										
MAJOR COMPONENT	7	5	5	5	5	5	5	5	6	6
MINOR COMPONENT	-2	0	0	1	0	1	0	-1	-2	-2
JULY 29 1975										
MAJOR COMPONENT	9	13	13	11	8					
MINOR COMPONENT	0	1	0	0	0					

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

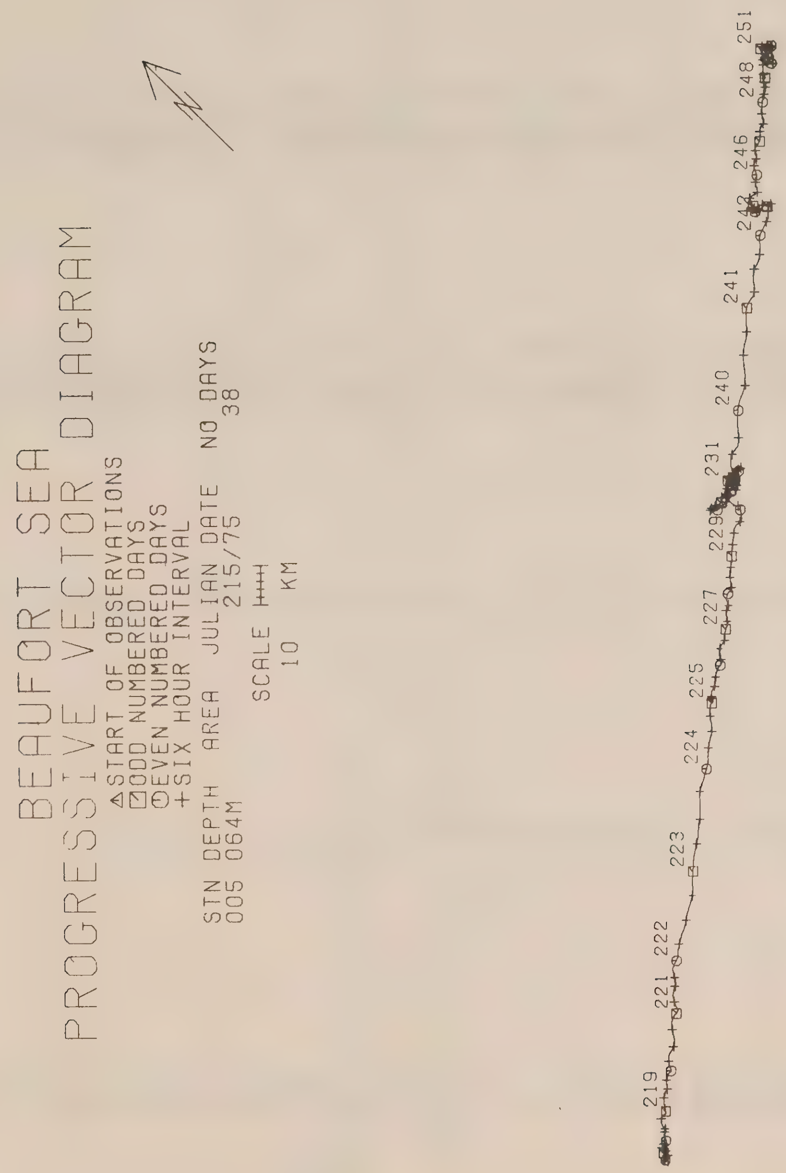
STN 005 DEPTH 064 BEAUFORT SEA 70 23.1 N 136 45.7 W LENGTH OF RECORD= 39 DAYS

START OF RECORD 00 MN 21 HR 03 DY 08 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	005	010	004	003																						22
10- 19	003	026	013	002																						44
20- 29	006	022	030	013	002																					73
30- 39	007	050	080	035	017	011	002	003																		205
40- 49	006	035	068	019	020	027	023	006	002																	206
50- 59	006	038	075	032	027	028	022	003																		231
60- 69	006	047	041	031	012	021	013	001																		172
70- 79	008	039	027	016	005	003	002																			100
80- 89	012	027	020	008	002	003																				72
90- 99	011	032	018	005	001																					67
100-109	006	031	013																							50
110-119	002	016	002																							20
120-129	010	026	001																							37
130-139	008	019	001																							28
140-149	009	015	001																							25
150-159	007	011																								18
160-169	006	012	001																							19
170-179	006	009	001																							16
180-189	001	004																								5
190-199	005	009	002																							16
200-209	009	008																								17
210-219	004	016	001																							21
220-229	005	016																								21
230-239	006	006																								12
240-249	007	019																								26
250-259	007	018																								25
260-269	004	031																								35
270-279	006	026																								32
280-289	003	017	003																							23
290-299	003	020	002																							25
300-309	003	009	002																							14
310-319	002	021	004																							27
320-329	004	017	001	001																						23
330-339	007	016	003	001																						27
340-349	005	015	003	003																						26
350-359	008	011	004	002																						25
	213	744	421	171	86	93	62	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1805

NUMBER OF ZERO RATES 58


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
005 064M 215/75 38
SCALE
10 KM
219
221
222
223
224
225
227
229
231
240
241
242
246
248
251

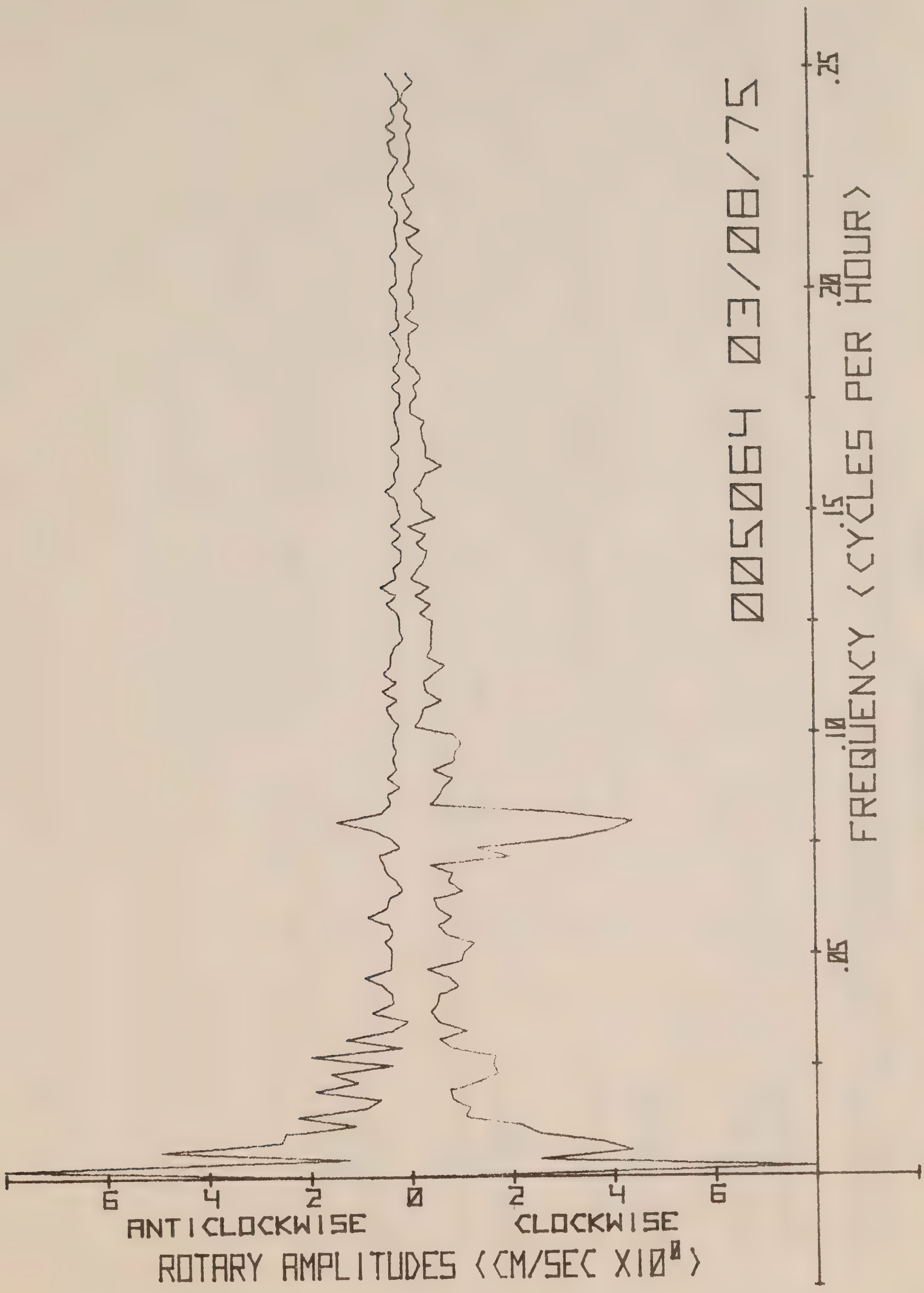
TIDAL CURRENT ELLIPSE

STN 005 DEPTH 064 BEAUFORT SEA 70 23.1 N 136 45.7 W

STARTING TIME OF ANALYSED DATA 0 MIN 22 HR 3 DAY 8 MON 75 YR

LENGTH OF DATA 38 DAYS 17 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	7.8	.0	39.2	.0
MM	4.5	-.1	38.8	325.5
MSF	5.3	.5	33.8	153.9
2Q1	.5	.0	90.2	265.6
Q1	.6	.3	7.0	161.3
O1	.3	-.1	119.0	64.9
NO1	.7	-.2	167.1	113.0
K1	.4	.2	22.5	174.1
J1	.9	-.2	139.7	80.1
OO1	.5	-.1	152.4	208.8
MNS2	1.1	-.9	86.7	192.9
MU2	.3	-.1	87.5	306.0
N2	2.1	-1.4	91.4	283.4
M2	3.3	-1.7	109.2	123.0
L2	1.7	-1.2	57.8	326.0
S2	1.1	-.8	77.8	220.8
KJ2	.8	-.5	64.1	101.5
2SM2	.7	-.6	169.3	80.7
MO3	.4	.0	108.3	261.1
M3	.2	-.1	159.1	275.5
MK3	.1	-.1	.8	350.0
SK3	.1	.0	18.6	160.5
MN4	.1	-.1	53.4	3.6
M4	.2	.0	87.3	117.7
SN4	.2	.0	146.5	307.8
MS4	.3	-.2	53.5	192.0
S4	.2	-.1	142.9	201.9
2MN6	.2	.0	152.2	225.7
M6	.1	.0	176.4	283.8
MSN6	.1	.0	105.3	89.4
2MS6	.1	.0	78.2	266.1
2SM6	.1	-.1	122.3	280.1
3MN8	.0	.0	110.7	6.7
M8	.1	.0	4.2	43.5
3MS8	.1	.1	8.8	90.0
M12	.1	.0	168.1	62.4


ØØ5Ø64 Ø3/Ø8/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
6
4
2
Ø
2
4
6
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X1Ø^Ø)

DAILY RESIDUALS (CM/SEC)

STATION 005 DEPTH 064 BEAUFORT SEA 70 23.1 N 136 45.7 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

AUG. 4 1975										
MAJOR COMPONENT										
	2	3	9	12	17	15	26	30	20	11
MINOR COMPONENT										
	0	-1	0	-1	-1	0	-5	-4	-2	-2
AUG. 14 1975										
MAJOR COMPONENT										
	10	10	11	14	9	3	-6	-6	2	6
MINOR COMPONENT										
	-2	-1	-1	-3	4	-4	3	4	-1	-3
AUG. 24 1975										
MAJOR COMPONENT										
	2	-1	-1	20	30	22	9	-1	1	9
MINOR COMPONENT										
	-1	2	1	-2	-3	-4	-3	4	1	-1
SEPT 3 1975										
MAJOR COMPONENT										
	10	11	8	6	2	1	-2	-3		
MINOR COMPONENT										
	-1	-1	-1	-1	2	-3	2	-1		

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

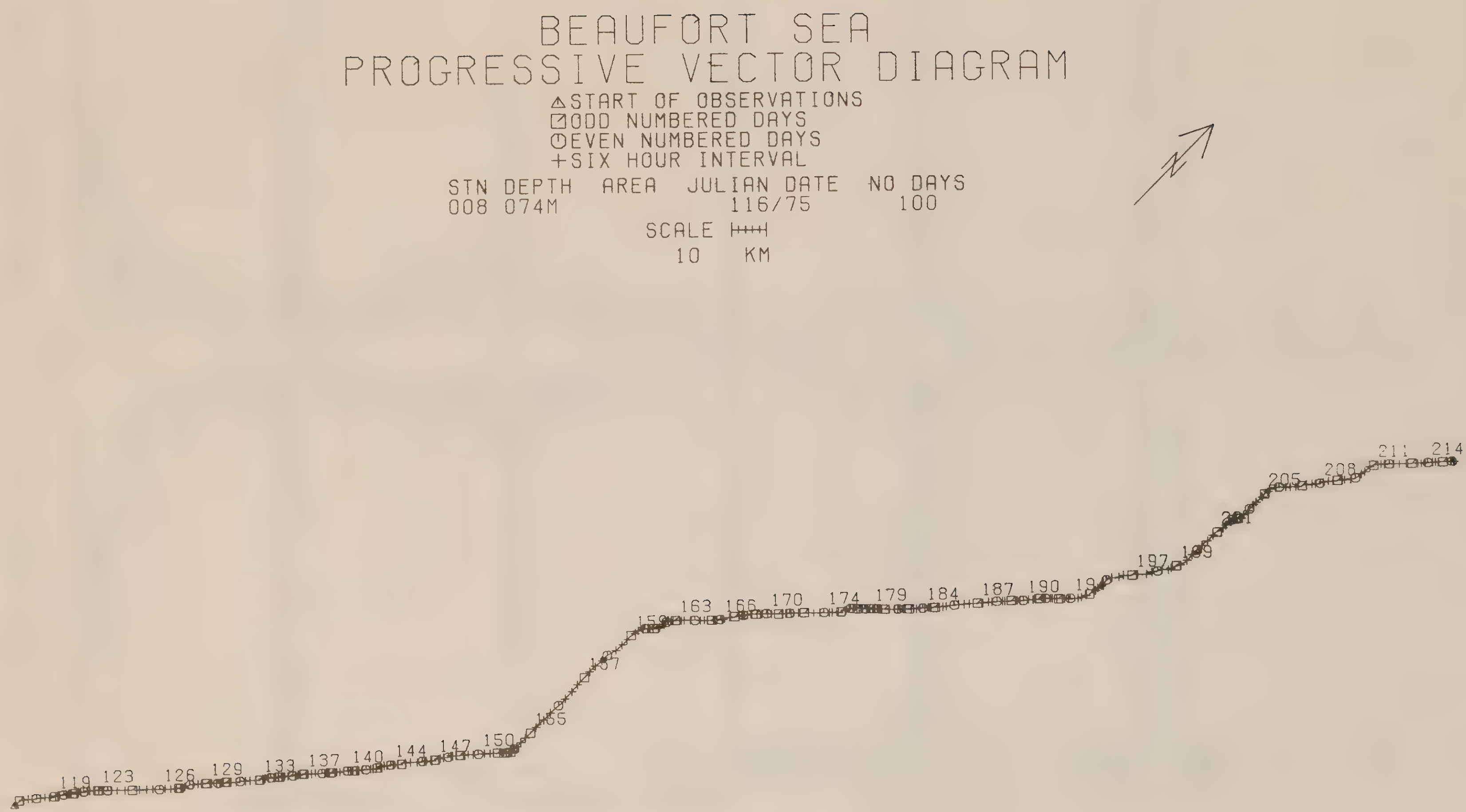
STN 008 DEPTH 074 BEAUFORT SEA 71 12.9 N 131 19.9 W LENGTH OF RECORD=101 DAYS

START OF RECORD 00 MN 16 HR 26 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	068	111	087	005																						271
10- 19	052	115	057																							224
20- 29	071	082	009	001																						163
30- 39	412	455	048																							915
40- 49	759	1230	112																							2101
50- 59																										0
60- 69																										0
70- 79																										0
80- 89																										0
90- 99																										0
100-109																										0
110-119																										0
120-129																										0
130-139																										0
140-149																										0
150-159																										0
160-169																										0
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
240-249																										0
250-259																										0
260-269																										0
270-279																										0
280-289																										0
290-299																										0
300-309																										0
310-319																										0
320-329																										0
330-339																										0
340-349																										0
350-359	078	133	089	002																						302
		2126		8		0		0		0		0		0		0		0		0		0		0		3976
	1440		402		0		0		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 826



BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
008 074M 116/75 100
SCALE
10 KM
119 123 126 129 133 137 140 144 147 150
155
157
159 163 166 170 174 179 184 187 190
197
205 208 211 214

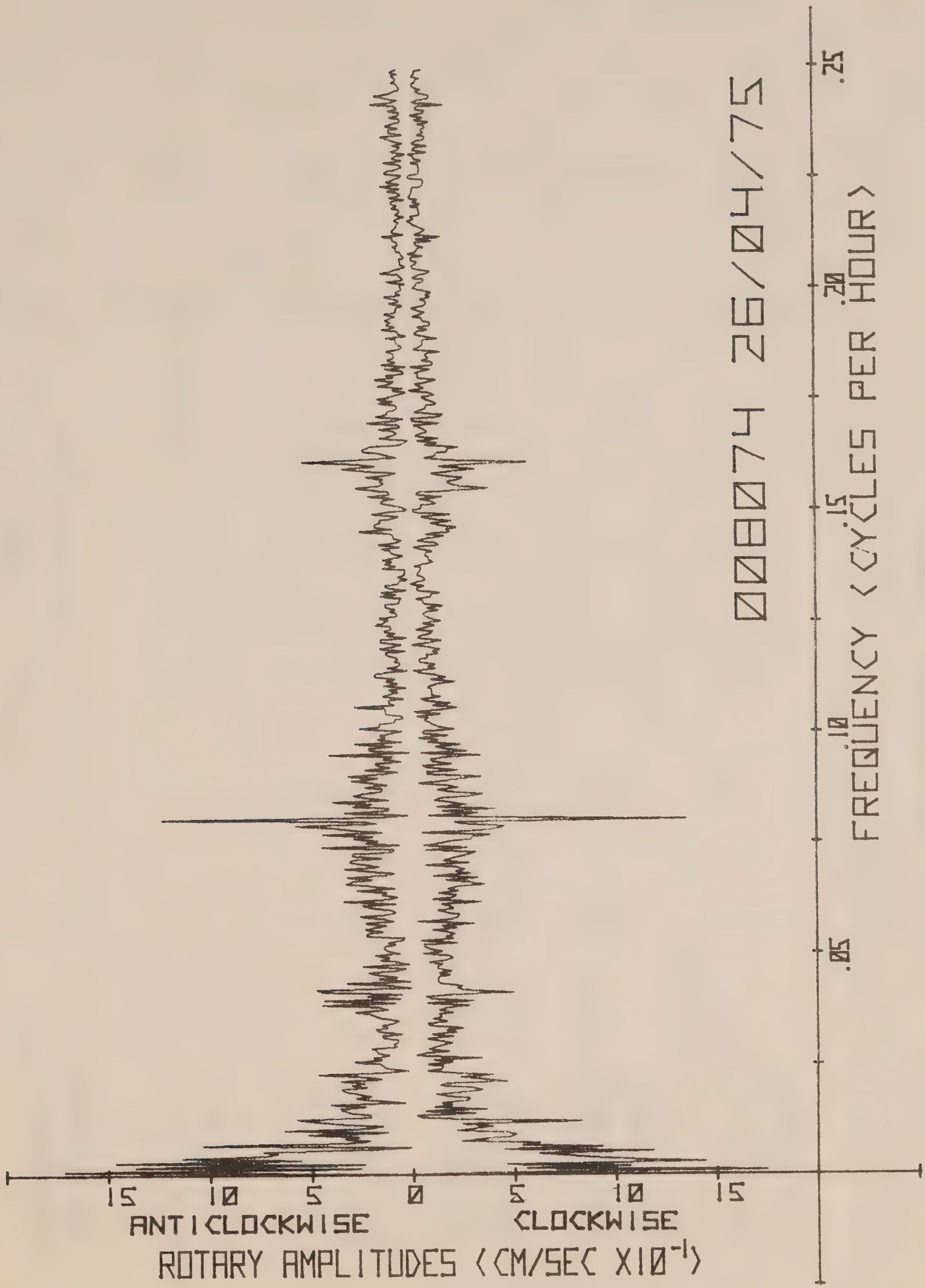
TIDAL CURRENT ELLIPSE

STN 008 DEPTH 074 BEAUFORT SEA 71 12.9 N 131 19.9 W

STARTING TIME OF ANALYSED DATA 0 MIN 17 HR 26 DAY 4 MON 75 YR

LENGTH OF DATA 99 DAYS 23 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	4.9	.0	57.8	.0
MM	.4	-.1	101.3	190.1
MSF	.9	.2	99.6	269.6
2Q1	.1	.0	28.7	257.2
Q1	.2	.0	35.8	359.3
O1	.3	.1	64.3	118.7
NO1	.2	.0	40.3	258.9
K1	.3	.0	83.2	110.3
J1	.3	.0	67.9	175.7
OO1	.1	.0	124.3	241.4
MNS2	.2	.0	47.1	37.5
MU2	.1	.0	55.5	147.4
N2	.4	.1	50.5	75.0
M2	1.2	-.1	33.5	88.0
L2	.5	-.1	45.0	126.3
S2	.3	.0	45.3	164.3
KJ2	.1	.0	75.5	235.6
2SM2	.0	.0	87.3	226.0
MO3	.2	.0	49.5	134.3
M3	.1	.0	54.8	276.4
MK3	.1	.0	34.7	221.9
SK3	.1	.0	69.0	189.7
MN4	.3	.0	60.6	89.9
M4	.7	.0	54.9	194.6
SN4	.2	.0	66.0	11.8
MS4	.3	-.1	55.4	110.9
S4	.1	.0	47.9	164.4
2MN6	.1	.0	75.0	103.5
M6	.1	.0	53.3	131.4
MSN6	.1	.0	65.5	31.9
2MS6	.1	.0	66.5	47.4
2SM6	.1	.0	62.9	189.6
3MN8	.0	.0	70.3	128.6
M8	.0	.0	89.1	148.5
3MS8	.1	.0	50.1	168.6
M12	.0	.0	65.3	255.4



00074 26/04/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
15
10
5
0
5
10
15
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10⁻¹)

DAILY RESIDUALS (CM/SEC)

STATION 008 DEPTH 074 BEAUFORT SEA 71 12.9 N 131 19.9 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 27 1975										
MAJOR COMPONENT	6	6	3	3	3	5	3	8	9	7
MINOR COMPONENT	1	1	1	0	1	0	0	0	0	0
MAY 7 1975										
MAJOR COMPONENT	4	5	4	3	4	7	3	3	4	4
MINOR COMPONENT	1	1	0	0	0	0	1	0	0	1
MAY 17 1975										
MAJOR COMPONENT	6	3	5	2	4	4	4	4	7	4
MINOR COMPONENT	0	0	1	0	0	0	1	0	1	0
MAY 27 1975										
MAJOR COMPONENT	4	4	6	7	3	2	1	5	9	9
MINOR COMPONENT	1	1	0	0	0	0	1	5	9	9
JUNE 6 1975										
MAJOR COMPONENT	8	8	5	3	4	3	6	6	3	5
MINOR COMPONENT	7	6	2	0	2	1	0	0	0	1
JUNE 16 1975										
MAJOR COMPONENT	3	4	3	4	4	5	6	6	3	2
MINOR COMPONENT	1	0	0	0	0	0	0	0	1	0

DAILY RESIDUALS (CM/SEC)

STATION 008 DEPTH 074 BEAUFORT SEA 71 12.9 N 131 19.9 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 26 1975									
MAJOR COMPONENT									
2	2	2	2	5	4	4	4	6	8
MINOR COMPONENT									
0	0	0	0	0	0	0	0	1	1
JULY 6 1975									
MAJOR COMPONENT									
7	5	4	5	2	4	4	6	5	8
MINOR COMPONENT									
1	0	0	0	0	0	0	1	4	2
JULY 16 1975									
MAJOR COMPONENT									
9	6	7	7	6	1	4	5	5	7
MINOR COMPONENT									
1	2	5	6	4	0	3	5	2	0
JULY 26 1975									
MAJOR COMPONENT									
6	6	6	6	5	7	5	5	3	
MINOR COMPONENT									
1	1	1	4	0	0	0	0	0	

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 009 DEPTH 042 BEAUFORT SEA 70 43.7 N 131 14.7 W LENGTH OF RECORD=102 DAYS
START OF RECORD 00 MN 15 HR 26 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9		001	001																							2
10- 19	001	001																								2
20- 29																										0
30- 39																										0
40- 49	586	362	108	032	002																					1090
50- 59	531	763	178	060	002																					1534
60- 69	398	397	042	024																						861
70- 79																										0
80- 89																										0
90- 99																										0
100-109																										0
110-119																										0
120-129																										0
130-139																										0
140-149																										0
150-159																										0
160-169																										0
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
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290-299																										0
300-309																										0
310-319																										0
320-329																										0
330-339																										0
340-349																										0
350-359			003																							3
		1524		116		0		0		0		0		0		0		0		0		0		0		3492
	1516		332		4		0		0		0		0		0		0		0		0		0		0	

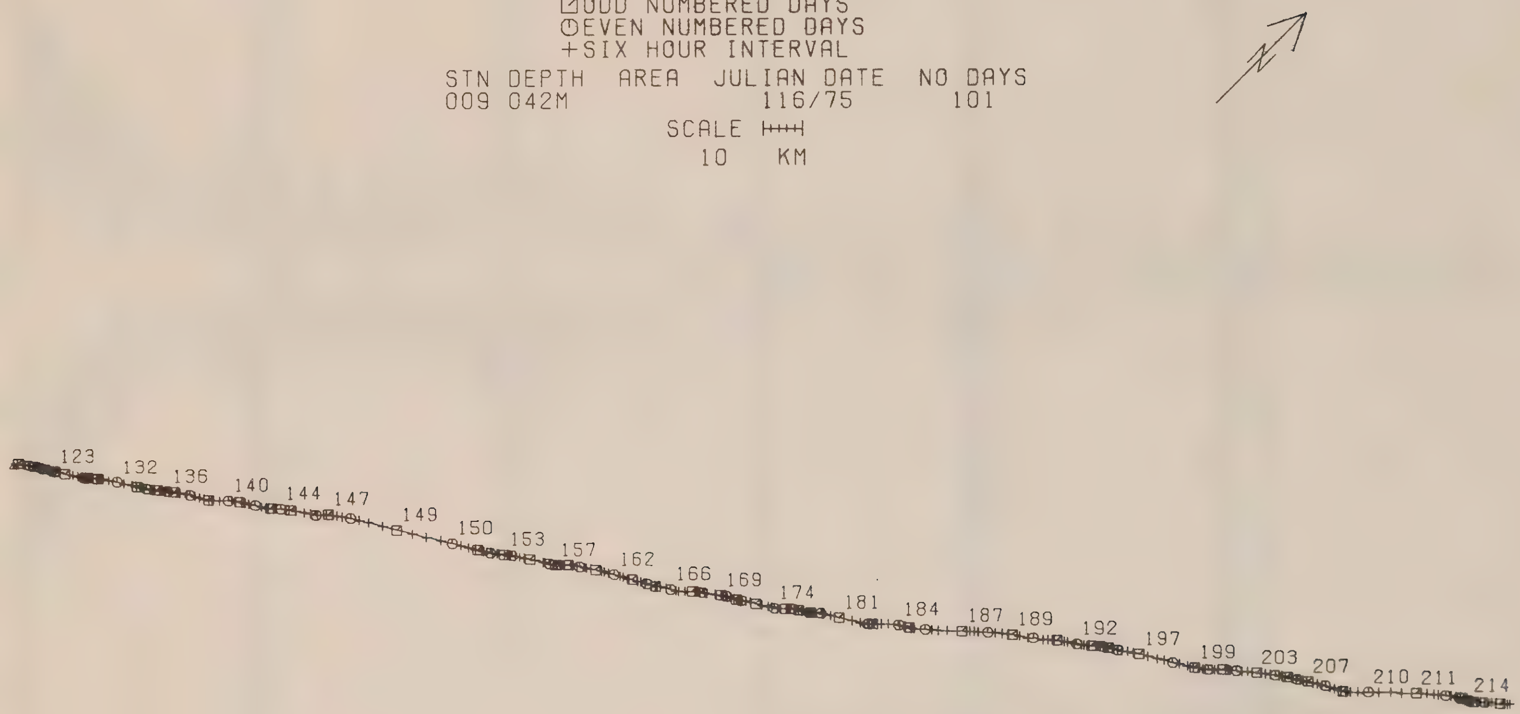
NUMBER OF ZERO RATES 1367

BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM

△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL

STN	DEPTH	AREA	JULIAN DATE	NO DAYS
009	042M		116/75	101

SCALE ⊢┼┼┤
10 KM



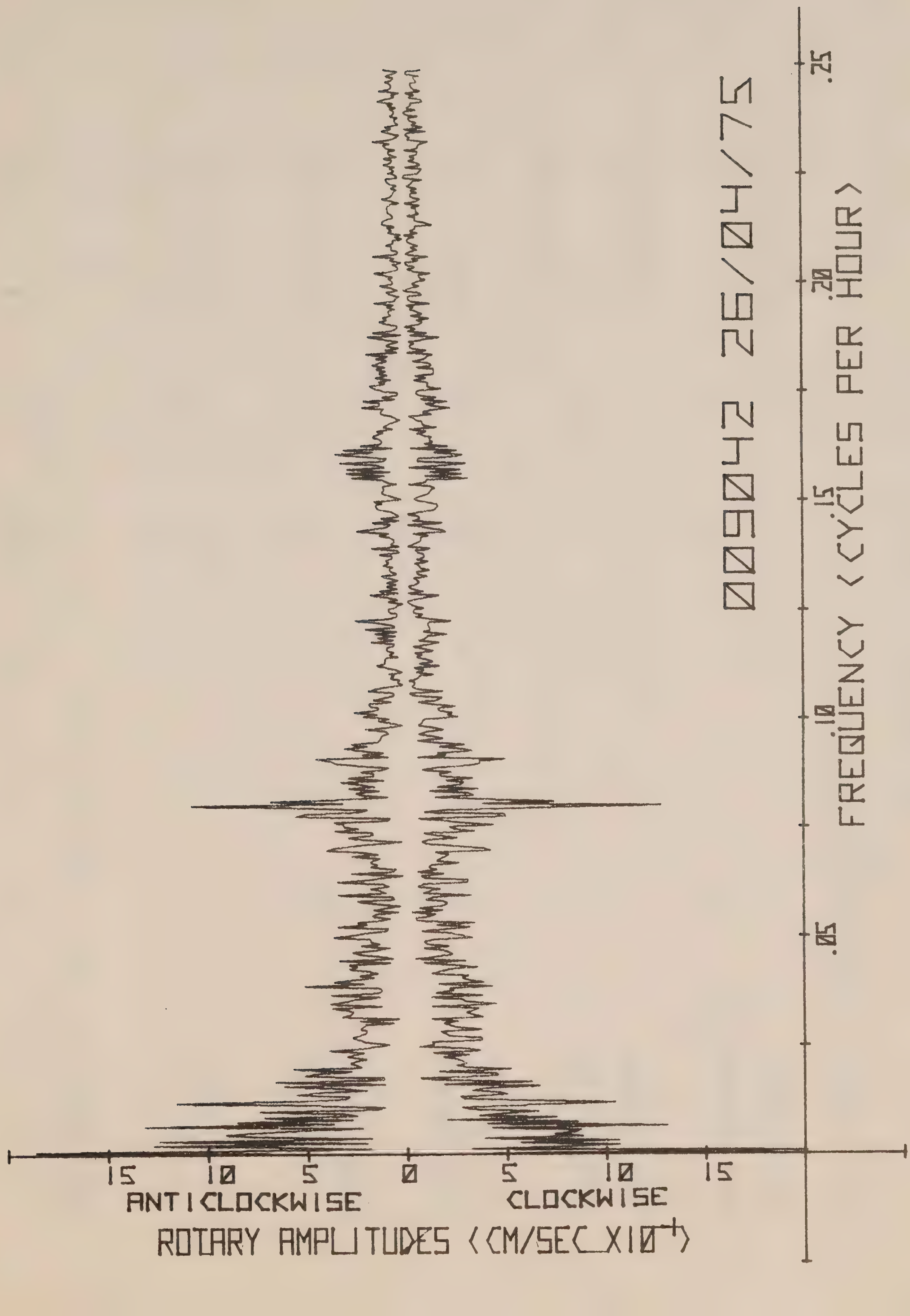
TIDAL CURRENT ELLIPSE

STN 009 DEPTH 042 BEAUFORT SEA 70 43.7 N 131 14.7 W

STARTING TIME OF ANALYSED DATA 0 MIN 16 HR 26 DAY 4 MON 75 YR

LENGTH OF DATA 101 DAYS 3 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	4.4	.0	35.8	.0
MM	.2	.0	71.1	279.4
MSF	.6	.0	20.5	111.0
2Q1	.1	.0	38.7	342.2
Q1	.2	.0	49.3	255.4
O1	.4	.0	44.2	243.7
NO1	.0	.0	123.4	91.5
K1	.2	.0	37.1	133.3
J1	.3	.0	45.8	57.0
OO1	.3	.0	40.1	41.7
MNS2	.3	.0	43.6	301.3
MU2	.1	.0	46.5	350.8
N2	.2	.0	14.6	54.6
M2	1.2	-.1	23.5	43.6
L2	.3	.0	32.3	186.8
S2	.3	.0	11.5	107.1
KJ2	.0	.0	150.3	39.0
2SM2	.3	.0	35.6	127.5
MO3	.2	.0	37.3	123.9
M3	.1	.0	28.3	343.9
MK3	.2	.0	35.7	28.6
SK3	.0	.0	66.4	90.8
MN4	.1	.0	30.2	104.7
M4	.4	.0	36.4	152.3
SN4	.1	.0	37.1	25.1
MS4	.3	.0	30.9	29.6
S4	.2	.0	37.4	252.9
2MN6	.1	.0	53.1	303.7
M6	.0	.0	75.3	46.0
MSN6	.1	.0	29.3	60.1
2MS6	.0	.0	4.2	36.5
2SM6	.0	.0	45.1	193.6
3MN8	.0	.0	24.3	324.7
M8	.0	.0	53.5	259.4
3MS8	.1	.0	31.7	79.7
M12	.0	.0	179.9	86.4



009042 26/04/75
FREQUENCY <CYCLES PER HOUR>
.05
.10
.15
.20
.25
15 10 5 0 5 10 15
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES <CM/SEC X10-1>

DAILY RESIDUALS (CM/SEC)

STATION 009 DEPTH 042 BEAUFORT SEA 70 43.7 N 131 14.7 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 27 1975										
MAJOR COMPONENT	3	2	2	1	2	1	0	3	6	1
MINOR COMPONENT	-1	0	0	0	-1	0	0	-1	-1	0
MAY 7 1975										
MAJOR COMPONENT	0	1	2	1	5	6	2	3	3	2
MINOR COMPONENT	0	0	0	0	-1	-1	-1	0	0	0
MAY 17 1975										
MAJOR COMPONENT	5	5	6	3	5	5	3	3	7	4
MINOR COMPONENT	-1	-2	0	0	-1	-1	0	0	-2	0
MAY 27 1975										
MAJOR COMPONENT	6	13	16	8	4	4	2	5	6	2
MINOR COMPONENT	-1	-3	-4	-2	-1	0	0	-1	-1	0
JUNE 6 1975										
MAJOR COMPONENT	1	3	3	5	6	5	4	3	4	6
MINOR COMPONENT	0	0	0	-1	-1	-2	-1	-1	-1	-1
JUNE 16 1975										
MAJOR COMPONENT	3	5	1	3	2	4	6	3	2	2
MINOR COMPONENT	0	-1	0	-1	0	-1	-1	0	0	0

DAILY RESIDUALS (CM/SEC)

STATION 009 DEPTH 042 BEAUFORT SEA 70 43.7 N 131 14.7 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 26 1975									
MAJOR COMPONENT									
3	1	3	5	9	2	7	3	4	11
MINOR COMPONENT									
-1	0	0	-1	-2	0	0	-1	0	-1
JULY 6 1975									
MAJOR COMPONENT									
8	7	6	7	6	4	3	2	3	6
MINOR COMPONENT									
0	-1	-1	-1	-1	-1	0	0	-1	-1
JULY 16 1975									
MAJOR COMPONENT									
10	7	4	4	4	6	5	3	3	3
MINOR COMPONENT									
-3	-2	-1	0	0	-1	-1	-1	-1	-1
JULY 26 1975									
MAJOR COMPONENT									
5	5	7	14	9	5	2	1	3	5
MINOR COMPONENT									
-1	-2	0	0	-1	-1	-1	0	0	0

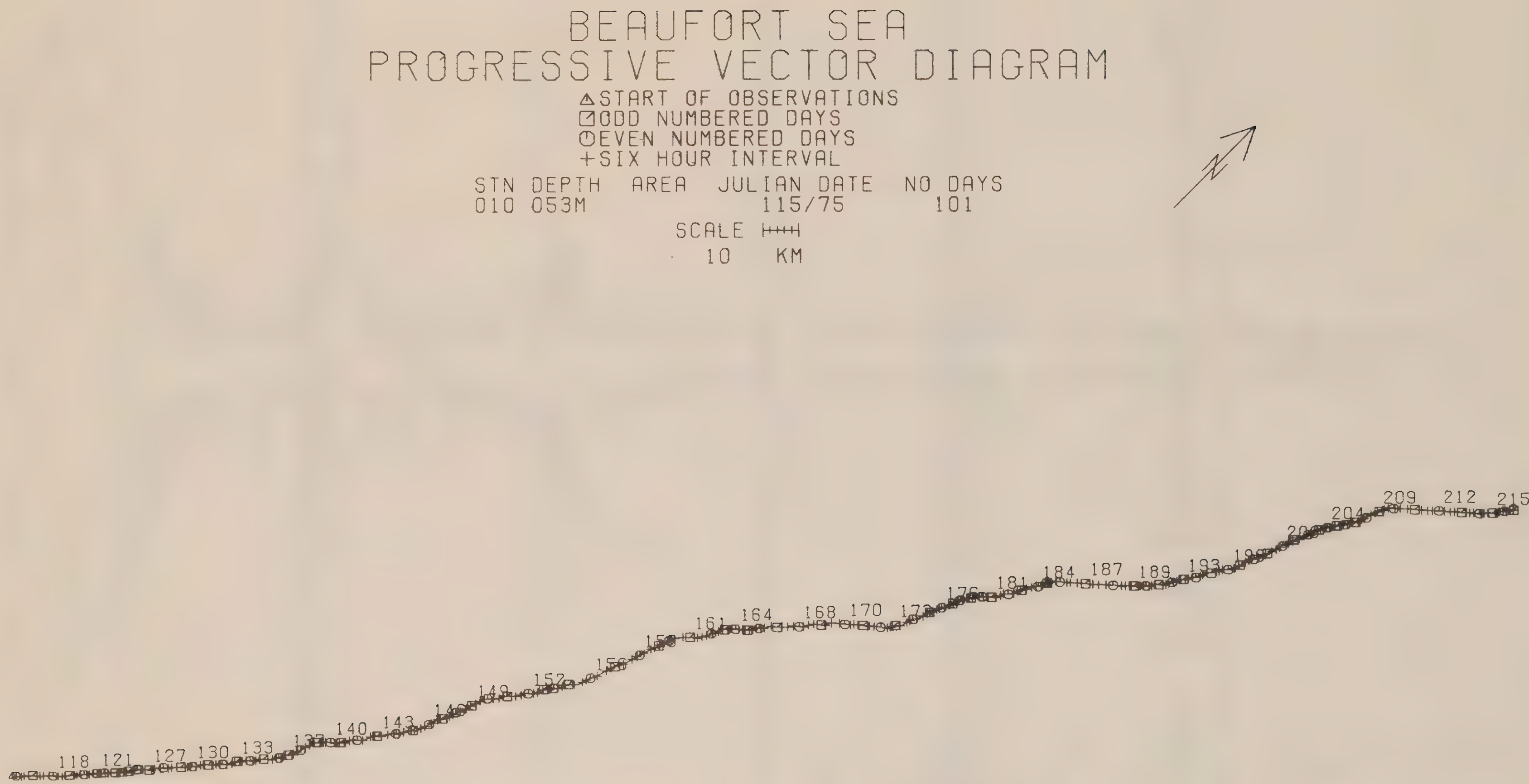
FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

STN 010 DEPTH 053 BEAUFORT SEA 71 18.6 N 128 54.5 W LENGTH OF RECORD=102 DAYS
START OF RECORD 30 MN 18 HR 25 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9																										0
10- 19	507	687	098	004																						1296
20- 29	211	130	008																							349
30- 39	300	320	026																							646
40- 49	624	641	064																							1329
50- 59	349	380	069																							798
60- 69																										0
70- 79																										0
80- 89																										0
90- 99																										0
100-109																										0
110-119																										0
120-129																										0
130-139																										0
140-149																										0
150-159																										0
160-169																										0
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
240-249																										0
250-259																										0
260-269																										0
270-279																										0
280-289																										0
290-299																										0
300-309																										0
310-319																										0
320-329																										0
330-339																										0
340-349																										0
350-359																										0
	1991	2158	265	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4418

NUMBER OF ZERO RATES 449


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
010 053M 115/75 101
SCALE
10 KM
118 121 127 130 133 140 143 149 152 161 164 168 170 176 181 184 187 189 193 204 209 212 215

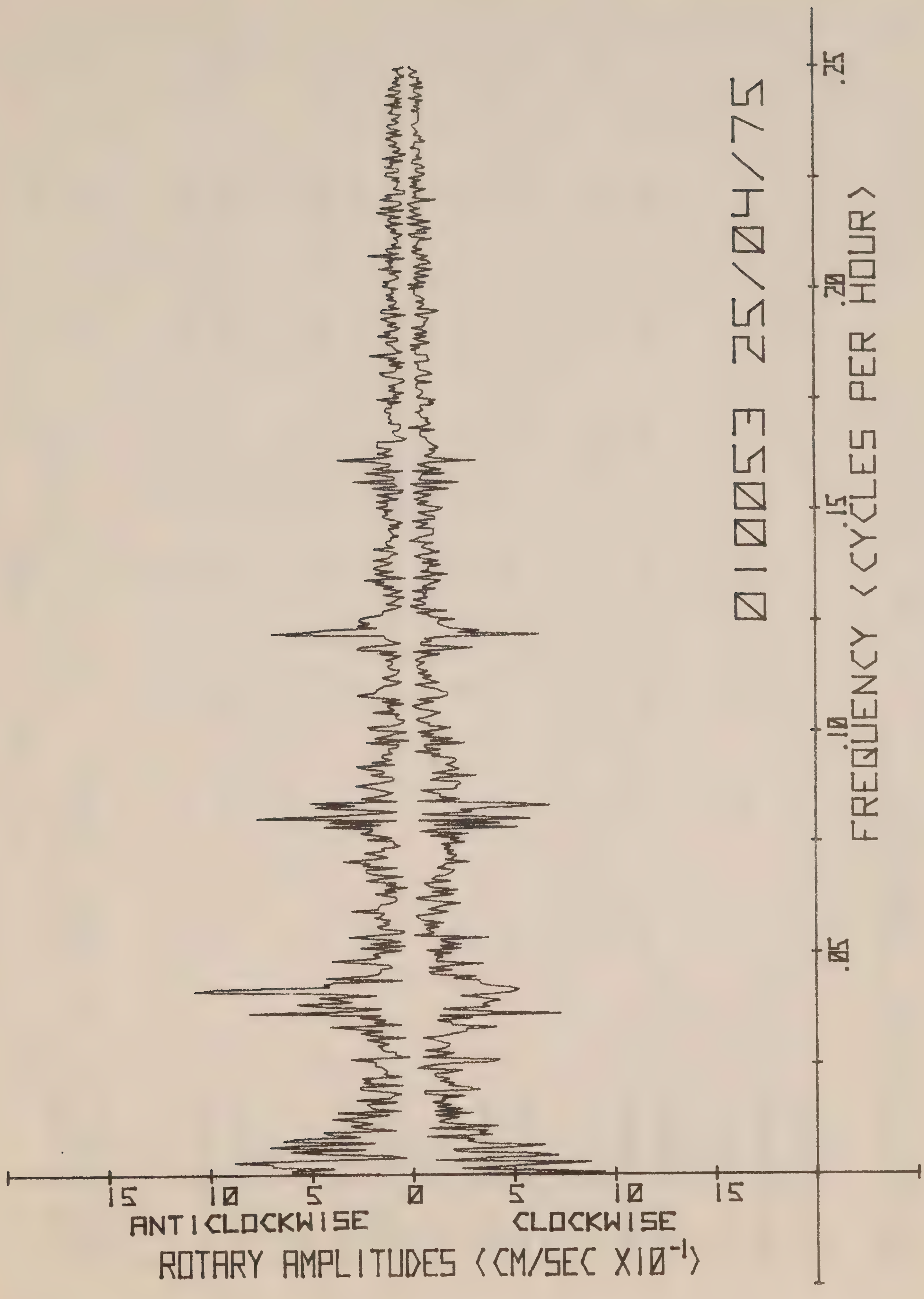
TIDAL CURRENT ELLIPSE

STN 010 DEPTH 053 BEAUFORT SEA 71 18.6 N 128 54.5 W

STARTING TIME OF ANALYSED DATA 0 MIN 20 HR 25 DAY 4 MON 75 YR

LENGTH OF DATA 101 DAYS 7 HOURS

CONSTITUENT	AMPLITUDES (CMS/SEC)		INCLINATION	GREENWICH
NAME	MAJOR AXIS	MINOR AXIS		PHASE LAG
Z0	4.9	.0	54.9	.0
MM	.5	.1	18.8	309.2
MSF	.5	.1	52.1	266.2
2Q1	.2	.0	60.9	341.4
Q1	.3	.1	16.5	256.3
O1	.5	.2	67.5	.4
NO1	.1	.0	58.7	183.1
K1	1.0	.2	119.7	5.0
J1	.3	.0	54.2	87.7
OO1	.3	.1	132.2	25.0
MNS2	.1	.0	19.1	244.5
MU2	.1	.0	77.6	202.5
N2	.3	.0	34.4	175.7
M2	.7	.0	150.2	339.7
L2	.3	-.1	52.2	297.9
S2	.5	-.1	83.1	34.9
KJ2	.1	.0	52.5	171.4
2SM2	.1	.0	73.9	58.1
MO3	.3	.0	45.1	307.9
M3	.1	.0	43.6	1.8
MK3	.8	.1	57.8	131.5
SK3	.2	.0	69.8	32.3
MN4	.1	.0	35.1	264.0
M4	.3	.0	48.4	262.5
SN4	.1	.0	51.2	207.5
MS4	.2	.0	54.5	161.8
S4	.0	.0	39.5	92.3
2MN6	.0	.0	64.9	143.3
M6	.0	.0	68.7	79.7
MSN6	.0	.0	7.9	124.3
2MS6	.0	.0	62.6	227.4
2SM6	.0	.0	19.5	315.8
3MN8	.0	.0	60.0	69.8
M8	.1	.0	45.0	88.2
3MS8	.0	.0	60.0	104.2
M12	.0	.0	55.2	99.1


010053 25/04/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
15
10
5
0
5
10
15
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10^{-1})

DAILY RESIDUALS (CM/SEC)

STATION 010 DEPTH 053 BEAUFORT SEA 71 18.6 N 128 54.5 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 26 1975										
MAJOR COMPONENT	6	7	5	5	4	2	4	2	2	3
MINOR COMPONENT	0	0	0	0	0	0	0	0	0	1
MAY 6 1975										
MAJOR COMPONENT	4	5	6	4	5	5	5	4	4	5
MINOR COMPONENT	0	1	0	0	1	0	1	0	0	0
MAY 16 1975										
MAJOR COMPONENT	3	4	5	4	4	5	7	6	5	5
MINOR COMPONENT	1	1	3	0	0	1	1	1	1	2
MAY 26 1975										
MAJOR COMPONENT	4	4	5	5	6	7	5	3	5	7
MINOR COMPONENT	2	2	2	2	1	1	1	0	1	2
JUNE 5 1975										
MAJOR COMPONENT	8	8	6	4	7	7	4	4	4	4
MINOR COMPONENT	4	4	3	2	1	1	1	0	0	1
JUNE 15 1975										
MAJOR COMPONENT	6	7	7	8	6	5	5	6	6	4
MINOR COMPONENT	0	0	1	0	0	-1	1	2	2	2

DAILY RESIDUALS (CM/SEC)

STATION 010 DEPTH 053 BEAUFORT SEA 71 18.6 N 128 54.5 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 25 1975									
MAJOR COMPONENT									
3	3	4	3	3	5	4	5	3	4
MINOR COMPONENT									
1	1	1	0	0	1	1	1	1	0
JULY 5 1975									
MAJOR COMPONENT									
8	9	7	4	4	4	4	4	5	5
MINOR COMPONENT									
-1	-1	0	0	0	1	1	1	1	1
JULY 15 1975									
MAJOR COMPONENT									
4	4	4	5	4	4	4	3	3	3
MINOR COMPONENT									
1	2	2	2	2	2	1	1	1	0
JULY 25 1975									
MAJOR COMPONENT									
3	3	4	5	7	8	7	6	4	4
MINOR COMPONENT									
1	1	2	1	0	0	0	0	0	1
AUG. 4 1975									
MAJOR COMPONENT									
3									
MINOR COMPONENT									
0									

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

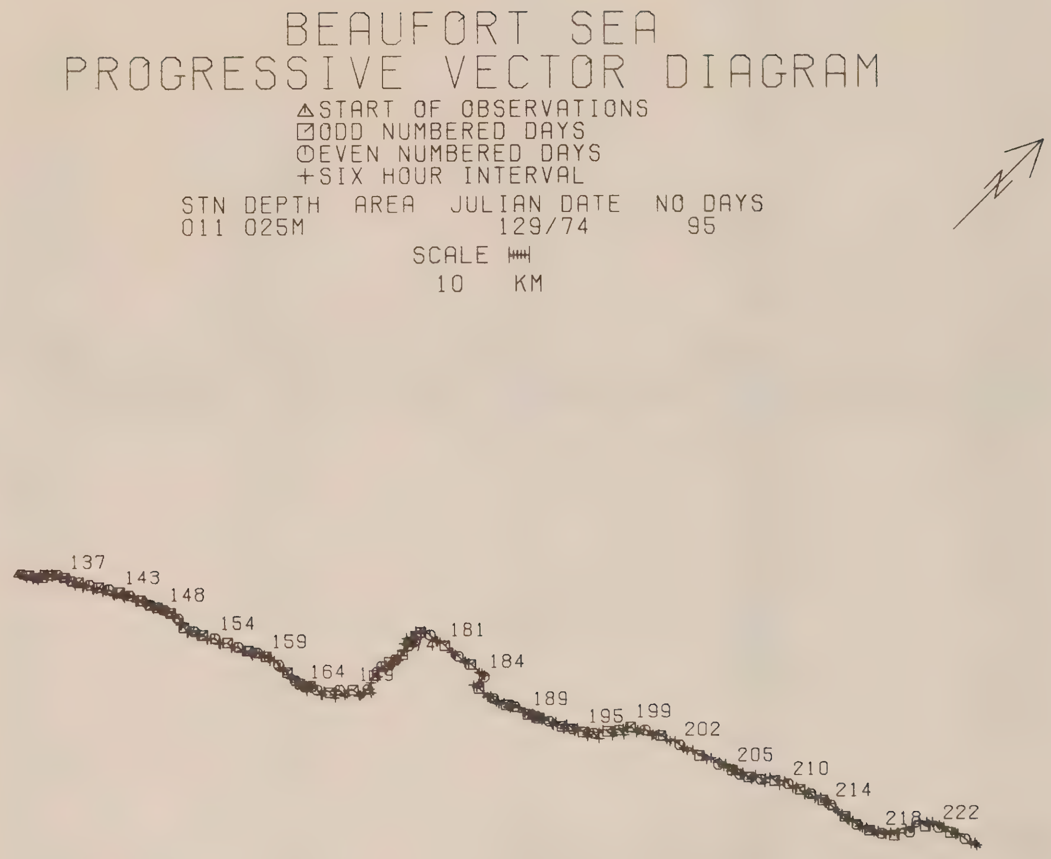
STN 011 DEPTH 025 BEAUFORT SEA 71 2.5 N 128 31.5 W LENGTH OF RECORD= 96 DAYS

START OF RECORD 0 MN 15 HR 9 DY 5 MO 74 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	011	068	046	013	003	001																				142
10- 19	024	085	053	008	001																					171
20- 29	016	078	054	008	003																					159
30- 39	009	034	019	001																						63
40- 49	012	055	035	004																						106
50- 59	015	069	040	006	001																					131
60- 69	017	074	037	009	001																					138
70- 79	010	099	113	064	026	001																				313
80- 89	072	258	369	271	118	034	005																			1127
90- 99	075	160	162	185	048	014																				644
100-109	031	106	099	015																						251
110-119		004	010																							14
120-129																										0
130-139																										0
140-149		001																								1
150-159	001	005																								6
160-169	004			002	002	003																				11
170-179	008	007	005	002																						22
180-189	003	007																								10
190-199	018	007	002	001	004																					32
200-209	016	005	003	002																						26
210-219	003	003	001																							7
220-229	004		001																							5
230-239	007	001	002																							10
240-249	001	002	002																							5
250-259	009	006	001																							16
260-269	015	017	028	022	007																					89
270-279	017	031	045	025	019																					137
280-289	008	053	037	023	009																					130
290-299	004	019	021	013	009	001																				67
300-309	007	030	035	018	009																					99
310-319	007	030	032	021	006	002																				98
320-329	007	044	044	011	006	002																				114
330-339	006	042	045	012	005	003																				113
340-349	013	056	037	016	004	003																				129
350-359	016	051	045	014	003	001																				130
		1507		766		65		0		0		0		0		0		0		0		0		0		4516
	466		1423		284		5		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 63


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☑ODD NUMBERED DAYS
⦶EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
011 025M 129/74 95
SCALE
10 KM
137
143
148
154
159
164
181
184
189
195
199
202
205
210
214
218
222

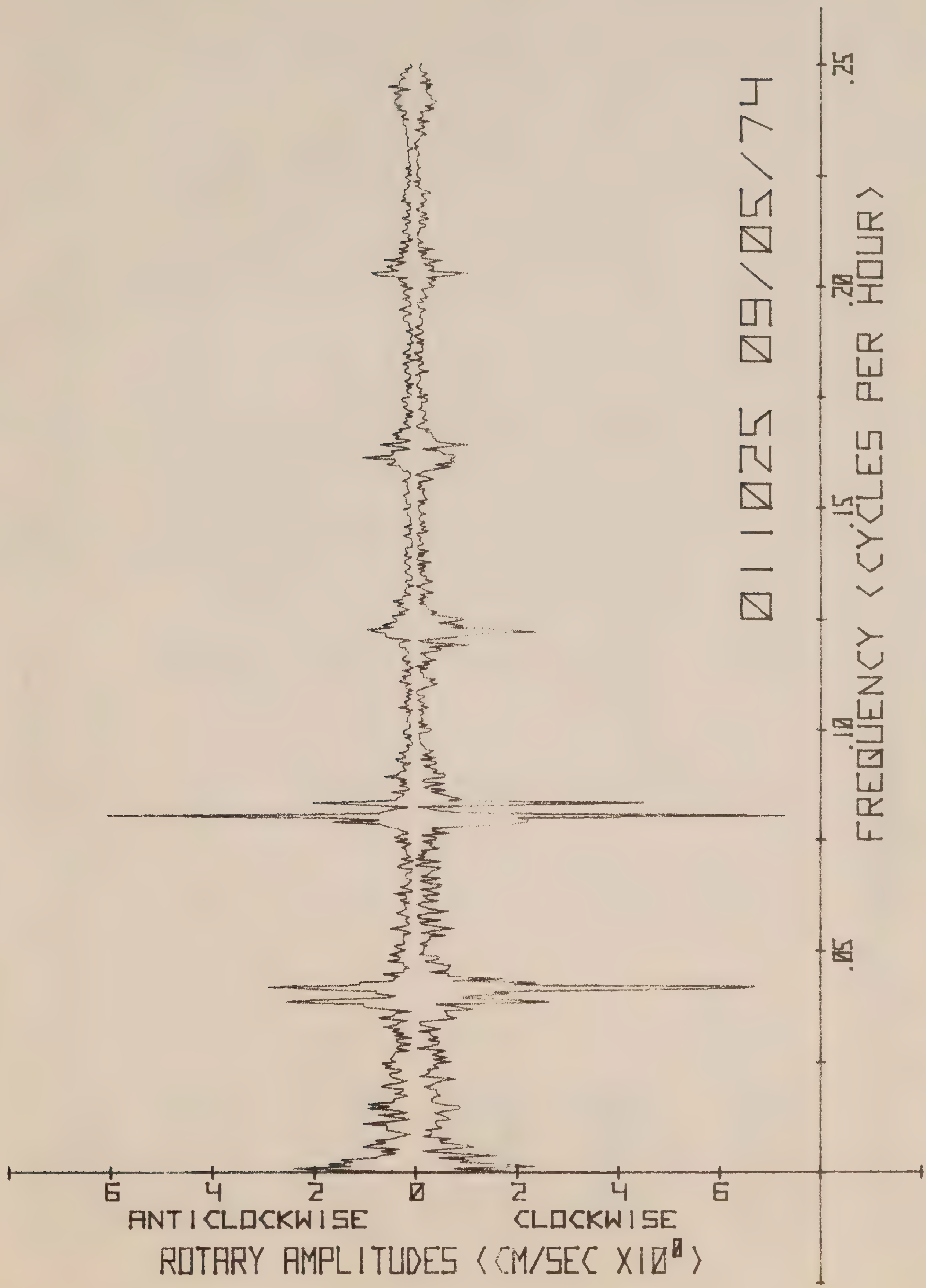
TIDAL CURRENT ELLIPSE

STN 011 DEPTH 025 BEAUFORT SEA 71 2.5 N 128 31.5 W

STARTING TIME OF ANALYSED DATA 0 MIN 16 HR 9 DAY 5 MON 74 YR

LENGTH OF DATA 95 DAYS 8 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	6.2	.0	28.8	.0
MM	1.6	-.2	120.3	318.2
MSF	1.1	.4	5.9	312.1
ALP1	.3	.1	48.4	164.6
2Q1	.5	-.1	62.2	190.5
Q1	1.0	-.1	3.9	263.5
O1	3.4	.1	176.0	102.4
NO1	.5	-.2	8.0	290.5
K1	6.6	-3.0	155.7	41.7
J1	1.1	-.2	169.8	55.5
OO1	.8	-.3	14.3	256.4
UPS1	.3	-.2	1.5	158.7
EPS2	.5	.0	154.5	218.9
MU2	.2	.0	66.8	212.9
N2	2.0	-.4	163.4	338.9
M2	7.4	-.9	161.6	352.6
L2	.7	-.4	124.0	63.2
S2	3.7	-1.4	169.4	29.7
ETA2	.6	-.4	167.9	214.9
MO3	.6	-.4	7.5	197.2
M3	.8	-.2	10.5	130.4
MK3	2.2	-.9	170.6	16.5
SK3	.9	-.4	13.6	198.4
MN4	.6	-.1	169.7	325.8
M4	1.0	.0	163.9	357.3
SN4	.5	.0	3.6	150.5
MS4	.9	-.5	9.9	169.6
S4	.1	.0	54.5	169.0
2MK5	.9	-.1	17.8	147.4
2SK5	.1	.0	160.2	76.6
2MN6	.3	.0	3.9	71.7
M6	.5	.0	2.6	135.1
2MS6	.5	.0	21.0	110.0
2SM6	.2	.0	4.5	109.9
3MK7	.4	.1	9.5	104.4
M8	.1	.0	20.0	95.4



011025 09/05/74
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
6 4 2 0 2 4 6
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10^{0})

DAILY RESIDUALS (CM/SEC)

STATION 011 DEPTH 025 BEAUFORT SEA 71 2.5 N 128 31.5 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

MAY 10 1974										
MAJOR COMPONENT	4	4	3	1	4	3	5	4	4	6
MINOR COMPONENT	-1	-1	0	2	0	1	-2	-2	-1	-2
MAY 20 1974										
MAJOR COMPONENT	6	6	6	6	6	5	5	4	4	4
MINOR COMPONENT	-1	-1	-2	-2	-3	-2	-1	-1	-2	-3
MAY 30 1974										
MAJOR COMPONENT	3	6	5	7	7	6	6	5	6	7
MINOR COMPONENT	-5	-2	-2	-2	-3	-3	-2	-1	-2	-4
JUNE 9 1974										
MAJOR COMPONENT	5	4	3	3	3	3	8	6	8	8
MINOR COMPONENT	-5	-4	-2	-2	0	-2	-2	1	0	0
JUNE 19 1974										
MAJOR COMPONENT	4	4	5	4	4	3	1	2	3	5
MINOR COMPONENT	6	5	3	1	3	5	3	1	4	-1
JUNE 29 1974										
MAJOR COMPONENT	9	8	8	8	-3	8	8	5	7	5
MINOR COMPONENT	-6	-6	-5	-7	-7	-6	-4	-1	-4	-1

DAILY RESIDUALS (CM/SEC)

STATION 011 DEPTH 025 BEAUFORT SEA 71 2.5 N 128 31.5 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JULY 9 1974									
MAJOR COMPONENT									
1	6	7	6	6	6	8	7	7	8
MINOR COMPONENT									
-1	-2	-3	-1	-2	-1	1	1	2	-2
JULY 19 1974									
MAJOR COMPONENT									
10	11	11	11	8	4	5	7	8	8
MINOR COMPONENT									
-4	-5	-6	-5	-3	-3	-2	-1	-1	-2
JULY 29 1974									
MAJOR COMPONENT									
7	7	7	5	8	7	8	7	8	9
MINOR COMPONENT									
-3	-3	-3	-3	-7	-5	-3	-2	-1	2
AUG. 8 1974									
MAJOR COMPONENT									
8	8	7	8	9					
MINOR COMPONENT									
-4	-1	-3	-3	-6					

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

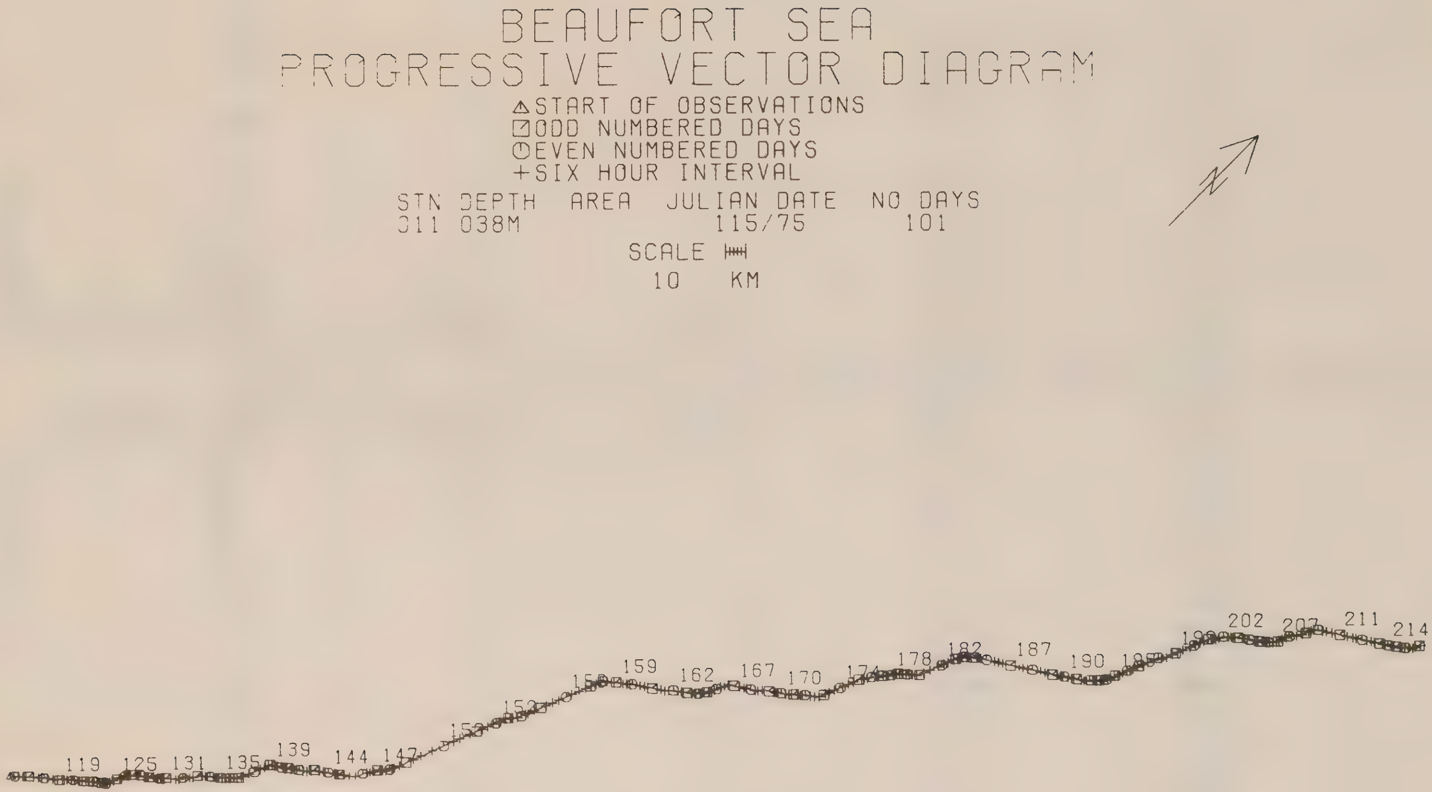
STN 011 DEPTH 038 BEAUFORT SEA 71 0.2 N 128 43.4 W LENGTH OF RECORD=102 DAYS

START OF RECORD 30 MN 19 HR 25 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9																										0
10- 19			004				001																			5
20- 29	297	663	519	213	047	029	004	003																		1775
30- 39	085	162	027	003																						277
40- 49	072	202	058	007																						339
50- 59	331	1019	551	130	037	002																				2070
60- 69	016	054	039	008	001																					118
70- 79																										0
80- 89																										0
90- 99																										0
100-109																										0
110-119																										0
120-129																										0
130-139																										0
140-149																										0
150-159																										0
160-169																										0
170-179																										0
180-189																										0
190-199																										0
200-209																										0
210-219																										0
220-229																										0
230-239																										0
240-249																										0
250-259																										0
260-269																										0
270-279																										0
280-289																										0
290-299																										0
300-309																										0
310-319																										0
320-329																										0
330-339																										0
340-349																										0
350-359																										0
	801	2100	1198	361	85	31	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4584

NUMBER OF ZERO RATES 290


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
START OF OBSERVATIONS
ODD NUMBERED DAYS
EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
311 038M 115/75 101
SCALE
10 KM
119
125
131
135
139
144
147
159
162
167
170
174
178
182
187
190
202
211
214

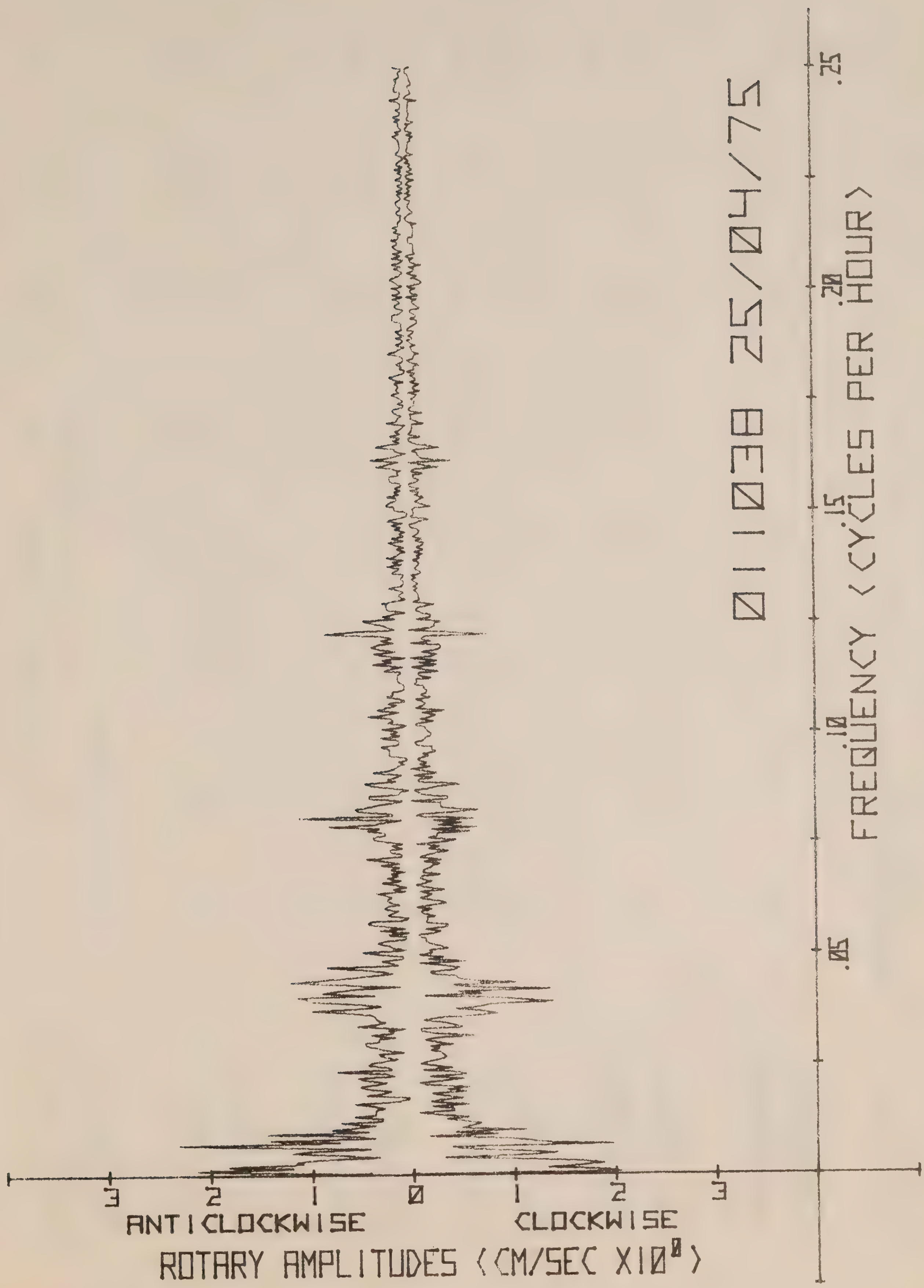
TIDAL CURRENT ELLIPSE

STN 011 DEPTH 038 BEAUFORT SEA 71 0.2 N 128 43.4 W

STARTING TIME OF ANALYSED DATA 0 MIN 21 HR 25 DAY 4 MON 75 YR

LENGTH OF DATA 101 DAYS 10 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	8.2	.0	49.6	.0
MM	1.1	-.1	116.5	128.5
MSF	1.0	-.2	134.5	160.5
2Q1	.4	.0	37.5	257.9
Q1	.6	.2	24.9	4.6
O1	1.4	-.5	21.4	276.0
NO1	.7	.2	44.8	284.1
K1	1.2	.0	150.3	97.6
J1	.8	.1	49.7	186.7
OO1	.5	.0	57.1	42.3
MNS2	.1	.0	17.4	29.5
MU2	.6	-.1	40.9	170.2
N2	.3	.1	81.1	230.1
M2	.7	.3	102.3	316.2
L2	.5	.1	47.5	303.6
S2	.3	.0	43.5	130.0
KJ2	.2	.0	50.2	344.8
2SM2	.4	.0	42.7	273.7
MO3	.4	.0	38.5	284.3
M3	.2	.0	47.6	157.9
MK3	.9	.1	34.7	116.4
SK3	.3	.1	31.8	13.0
MN4	.2	.0	34.7	68.1
M4	.3	-.1	37.2	152.5
SN4	.0	.0	29.0	35.0
MS4	.3	.0	33.1	60.5
S4	.1	.0	65.2	357.3
2MN6	.1	.0	46.8	126.5
M6	.0	.0	35.4	127.7
MSN6	.1	.0	59.7	74.6
2MS6	.0	.0	38.8	54.7
2SM6	.0	.0	14.5	231.4
3MN8	.0	.0	111.7	271.0
M8	.0	.0	42.2	117.9
3MS8	.0	.0	84.2	278.9
M12	.0	.0	47.6	341.0



011038 25/04/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
3
2
1
0
1
2
3
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X10^{0})

DAILY RESIDUALS (CM/SEC)

STATION 011 DEPTH 038 BEAUFORT SEA 71 0.2 N 128 43.4 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 26 1975										
MAJOR COMPONENT	9	9	9	8	7	5	5	3	6	6
MINOR COMPONENT	0	-1	-1	0	-1	-1	-1	0	2	2
MAY 6 1975										
MAJOR COMPONENT	4	5	5	6	4	10	8	8	6	6
MINOR COMPONENT	0	0	-1	-1	0	0	1	0	-1	0
MAY 16 1975										
MAJOR COMPONENT	5	9	10	6	4	6	9	8	7	13
MINOR COMPONENT	0	4	4	-1	-1	-1	0	-2	-1	0
MAY 26 1975										
MAJOR COMPONENT	9	7	9	22	20	12	7	8	11	15
MINOR COMPONENT	2	0	4	10	9	5	3	1	5	6
JUNE 5 1975										
MAJOR COMPONENT	14	8	8	10	11	13	8	7	5	6
MINOR COMPONENT	6	3	-1	-1	-2	-2	-1	0	1	2
JUNE 15 1975										
MAJOR COMPONENT	10	10	10	8	7	7	11	9	11	7
MINOR COMPONENT	2	-2	-1	-1	-1	0	0	4	5	2

DAILY RESIDUALS (CM/SEC)

STATION 011 DEPTH 038 BEAUFORT SEA 71 0.2 N 128 43.4 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 25 1975										
MAJOR COMPONENT	6	6	4	6	7	13	9	5	5	7
MINOR COMPONENT	1	0	1	0	0	5	4	1	0	-2
JULY 5 1975										
MAJOR COMPONENT	14	13	12	7	7	7	5	4	5	7
MINOR COMPONENT	-3	-3	-3	-2	-1	-1	0	0	2	3
JULY 15 1975										
MAJOR COMPONENT	7	11	10	11	9	9	9	7	6	5
MINOR COMPONENT	3	5	3	4	4	2	-1	-1	-1	0
JULY 25 1975										
MAJOR COMPONENT	6	6	10	8	12	13	10	5	5	6
MINOR COMPONENT	0	3	2	2	-3	-3	-2	-1	-1	-1
AUG. 4 1975										
MAJOR COMPONENT	8									
MINOR COMPONENT	1									

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

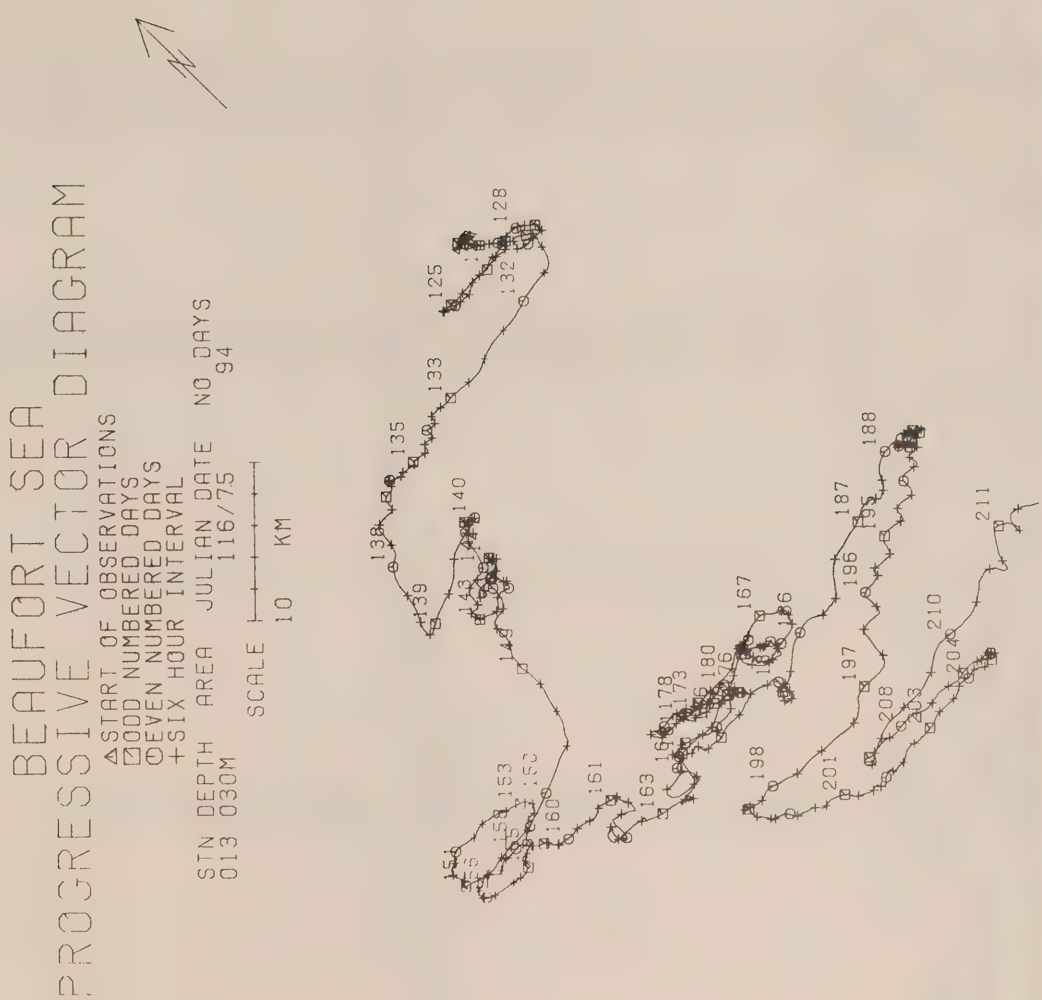
STN 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W LENGTH OF RECORD= 95 DAYS

START OF RECORD 00 MN 21 HR 26 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	027	006																								33
10- 19	020	009	003																							32
20- 29	012	007	004	001																						24
30- 39	042	009	012																							63
40- 49	039	009	010	003																						61
50- 59	070	027	017	003																						117
60- 69	069	063	027	003																						162
70- 79	059	072	021																							152
80- 89	076	090	023																							189
90- 99	076	084	024																							184
100-109	094	100	007																							201
110-119	068	067	002																							137
120-129	093	052	001																							146
130-139	077	024	001																							102
140-149	071	022	002																							95
150-159	067	018																								85
160-169	074	009																								83
170-179	089	031	005																							125
180-189	100	072	010	001																						183
190-199	044	050	015																							109
200-209	040	030	002																							72
210-219	029	029	013																							71
220-229	004	004	002																							10
230-239	027	026	005																							58
240-249	028	048	005	004																						85
250-259	026	067	027	002	001																					123
260-269	097	131	034																							262
270-279	102	128	037																							267
280-289	046	091	006																							143
290-299	051	036																								87
300-309	026	023	001																							50
310-319	041	010	001																							52
320-329	048	021																								69
330-339	029	022	001																							52
340-349	031	017	001																							49
350-359	028	009	001																							38
		1513		17		0		0		0		0		0		0		0		0		0		0		3771
	1920		320		1		0		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 783


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊠ODD NUMBERED DAYS
⊖EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
013 030M 116/75 94
SCALE
10 KM

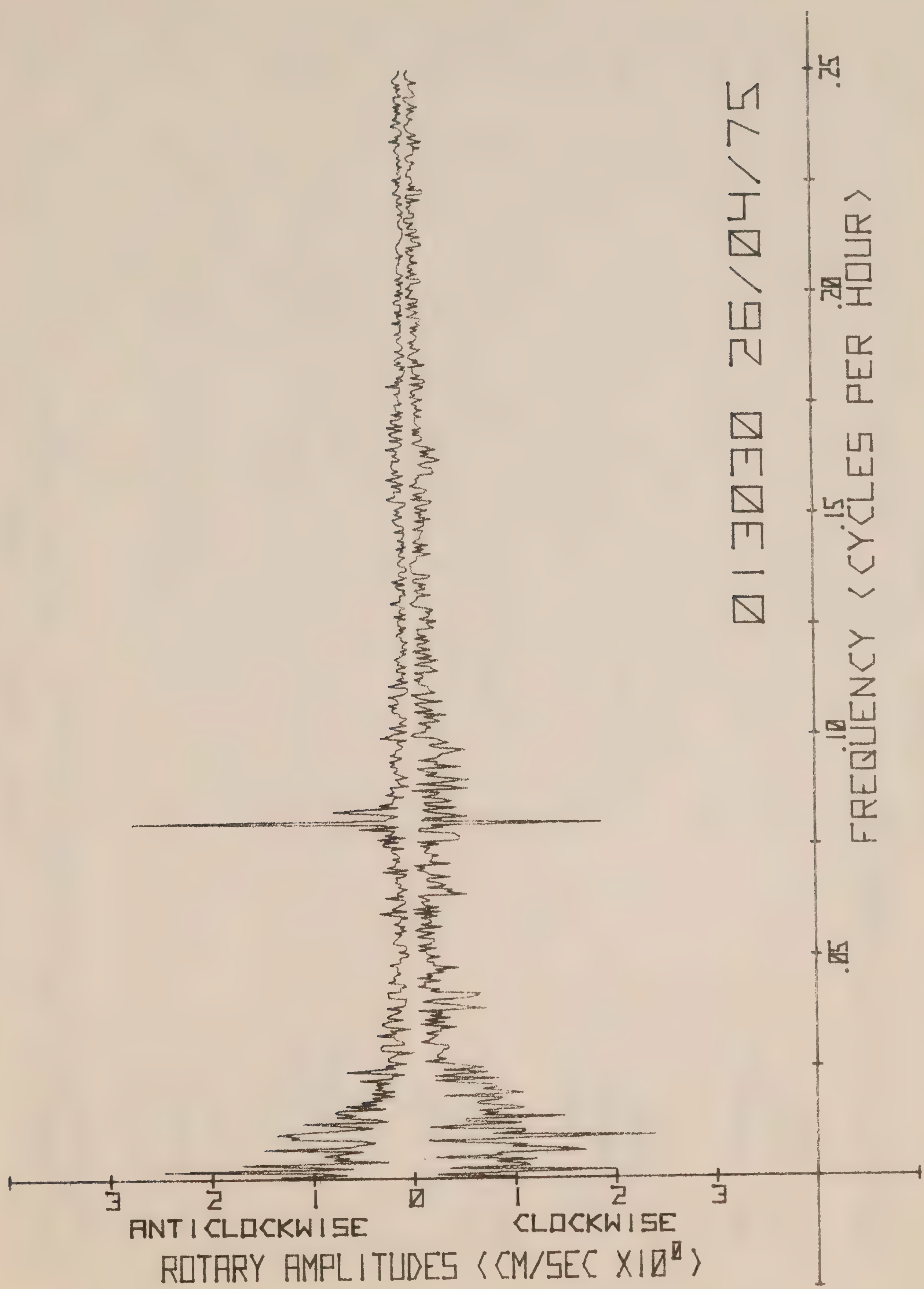
TIDAL CURRENT ELLIPSE

STN 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W

STARTING TIME OF ANALYSED DATA 0 MIN 22 HR 26 DAY 4 MON 75 YR

LENGTH OF DATA 94 DAYS 19 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	.5	.0	117.7	180.0
MM	1.1	-.1	22.5	235.1
MSF	1.3	.1	16.6	281.7
2Q1	.3	-.1	41.6	51.2
Q1	.1	.0	81.6	183.1
O1	.6	-.3	57.0	197.8
NO1	.1	-.1	77.8	309.6
K1	.6	-.3	68.4	122.7
J1	.1	.0	66.4	53.3
OO1	.2	-.1	41.6	337.8
MNS2	.2	.0	110.0	36.4
MU2	.3	-.1	133.0	20.6
N2	.4	.1	150.8	174.8
M2	2.2	.5	138.5	161.9
L2	.5	-.4	169.6	14.2
S2	.7	.1	131.9	221.4
KJ2	.3	-.1	121.9	339.2
2SM2	.3	-.2	130.3	94.5
MO3	.1	.0	90.3	258.9
M3	.0	.0	74.9	346.7
MK3	.1	.0	159.7	246.2
SK3	.2	-.1	144.0	110.7
MN4	.2	.0	99.8	98.1
M4	.1	.0	65.7	94.6
SN4	.1	.0	20.1	39.8
MS4	.1	-.1	46.4	327.7
S4	.1	.0	2.6	207.5
2MN6	.0	.0	83.8	1.5
M6	.1	.0	118.5	70.4
MSN6	.1	.0	148.8	264.9
2MS6	.1	.0	57.2	23.4
2SM6	.1	.0	69.5	32.7
3MN8	.0	.0	2.5	302.0
M8	.0	.0	157.5	79.4
3MS8	.0	.0	114.3	199.7
M12	.0	.0	75.3	153.6


Ø13Ø3Ø 26/Ø4/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
3 2 1 Ø 1 2 3
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X1ØØ)

DAILY RESIDUALS (CM/SEC)

STATION 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

APR. 27 1975									
MAJOR COMPONENT									
1	0	0	0	0	0	0	-4	0	3
MINOR COMPONENT									
0	0	-1	-1	-1	-1	0	4	0	-2
MAY 7 1975									
MAJOR COMPONENT									
3	0	-1	1	-5	-7	-2	-2	-1	-1
MINOR COMPONENT									
-2	-1	0	0	0	6	2	1	2	0
MAY 17 1975									
MAJOR COMPONENT									
-5	-5	8	0	-3	-4	2	1	0	2
MINOR COMPONENT									
0	-3	-3	1	-1	0	-2	1	0	0
MAY 27 1975									
MAJOR COMPONENT									
-2	-6	-9	-7	2	4	-2	-3	-2	1
MINOR COMPONENT									
0	-2	-2	6	1	-5	-1	0	3	0
JUNE 6 1975									
MAJOR COMPONENT									
2	0	0	3	-2	1	3	2	1	8
MINOR COMPONENT									
-2	-2	-2	-3	-1	-2	-2	0	-2	-3
JUNE 16 1975									
MAJOR COMPONENT									
-1	-1	1	-1	1	-5	-2	2	0	-1
MINOR COMPONENT									
-2	3	-2	2	0	4	3	-5	-1	2

DAILY RESIDUALS (CM/SEC)

STATION 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

JUNE 26 1975									
MAJOR COMPONENT									
-1	1	1	-5	-1	1	4	-1	4	8
MINOR COMPONENT									
3	-1	-2	3	1	-3	-4	0	-1	-4
JULY 6 1975									
MAJOR COMPONENT									
5	2	-1	0	-1	0	-2	-4	-4	-7
MINOR COMPONENT									
-2	-2	0	-1	2	-1	0	1	1	0
JULY 16 1975									
MAJOR COMPONENT									
-8	-2	0	1	1	4	4	1	1	-1
MINOR COMPONENT									
7	2	-3	-4	-3	-3	-3	-2	0	2
JULY 26 1975									
MAJOR COMPONENT									
-4	-3	9	8						
MINOR COMPONENT									
5	3	-6	-4						

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

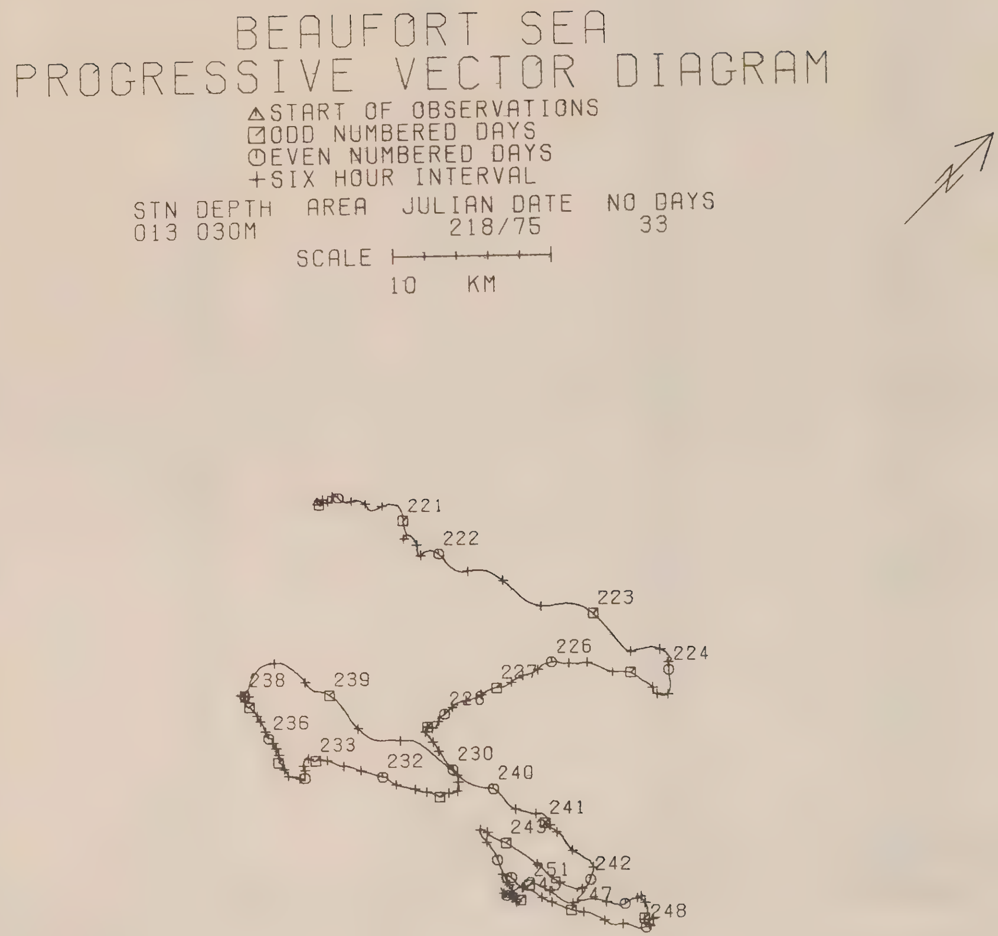
STN 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W LENGTH OF RECORD= 34 DAYS

START OF RECORD 00 MN 23 HR 06 DY 08 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	010	003																								13
10- 19	009	005	001																							15
20- 29	009	003	002	001																						15
30- 39	012	022	011	002																						47
40- 49	007	010	005	002	001																					25
50- 59	018	022	009	005																						54
60- 69	010	024	007	001																						42
70- 79	019	042	017	004																						82
80- 89	014	036	018	007	006																					81
90- 99	020	035	007	008	004																					74
100-109	028	034	004	001																						67
110-119	024	031	001																							56
120-129	013	010																								23
130-139	018	012	003																							33
140-149	021	003																								24
150-159	022	005																								27
160-169	019	004																								23
170-179	009																									9
180-189	044	001																								45
190-199	047	010																								57
200-209	037	019	001																							57
210-219	028	029	002																							59
220-229	029	013	001																							43
230-239	043	026	002																							71
240-249	052	046	003																							101
250-259	031	041	004																							76
260-269	019	021	004	001																						45
270-279	025	011																								36
280-289	033	007																								40
290-299	040	010																								50
300-309	007	002																								9
310-319	007	005	002																							14
320-329	010	004	003																							17
330-339	007	004																								11
340-349	007	001		002																						10
350-359	010	001	001	001																						13
		552		35		0		0		0		0		0		0		0		0		0		0		1464
	758		108		11		0		0		0		0		0		0		0		0		0		0	

NUMBER OF ZERO RATES 141


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
☐ODD NUMBERED DAYS
○EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
013 030M 218/75 33
SCALE
10 KM
221
222
223
224
226
227
228
230
232
233
236
238
239
240
241
242
243
245
247
248
251

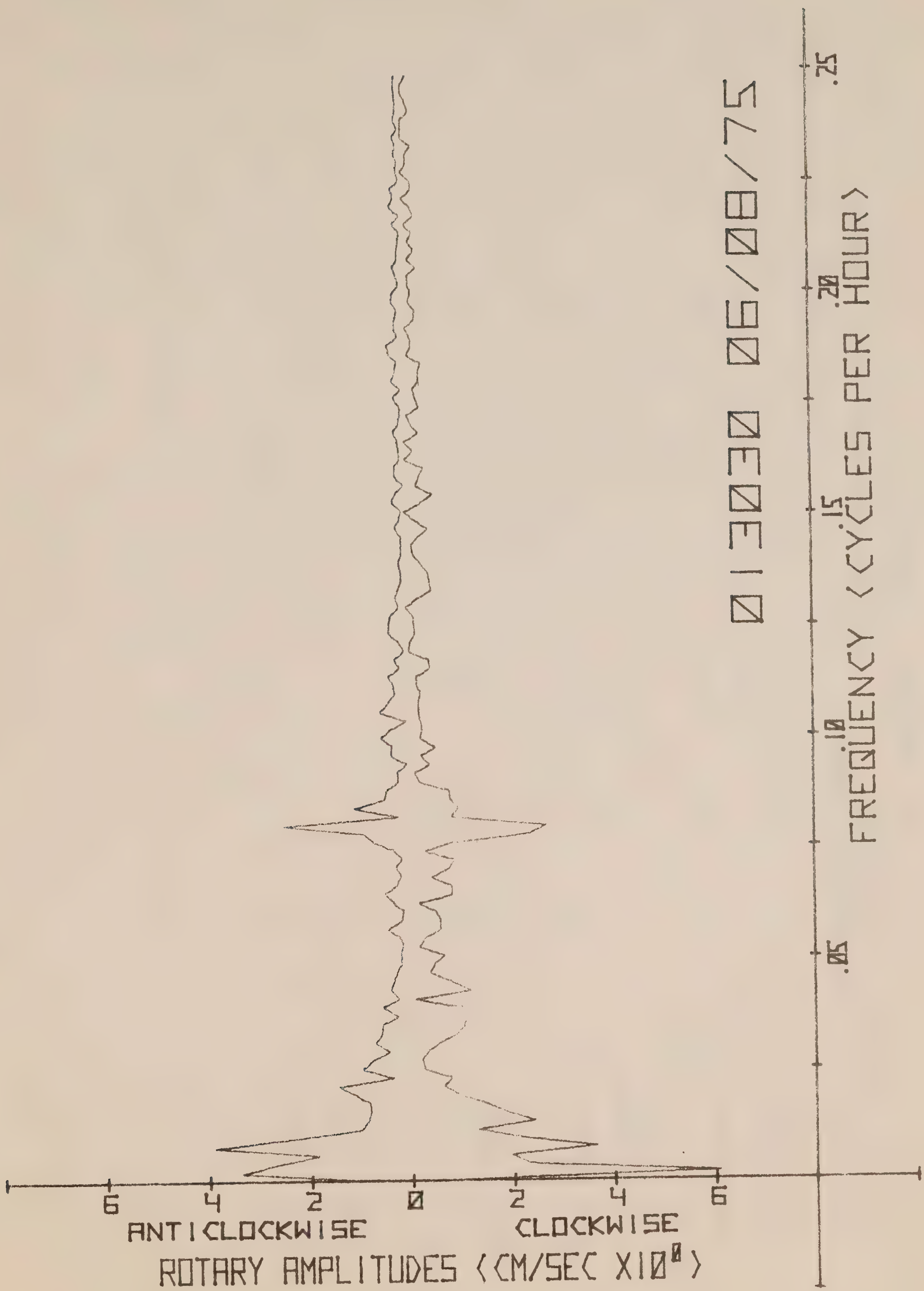
TIDAL CURRENT ELLIPSE

STN 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W

STARTING TIME OF ANALYSED DATA 0 MIN 0 HR 7 DAY 8 MON 75 YR

LENGTH OF DATA 33 DAYS 8 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	.9	.0	151.2	180.0
MM	2.8	-.5	37.3	276.5
MSF	1.5	-1.1	24.5	104.6
2Q1	.4	.1	61.5	78.4
Q1	.5	-.1	118.1	268.1
O1	.6	.0	82.8	159.7
NO1	.5	-.3	72.9	259.6
K1	.5	-.3	88.8	93.2
J1	.6	-.3	32.9	325.9
OO1	.6	-.3	19.8	207.9
MNS2	.4	.1	120.7	340.0
MU2	1.1	-.3	107.7	75.8
N2	.5	.1	62.5	346.7
M2	2.0	-.1	158.5	169.7
L2	.6	-.3	2.0	77.6
S2	1.1	-.2	146.0	239.1
2SM2	.1	.1	146.0	235.0
MO3	.1	-.1	52.8	248.6
M3	.2	.0	113.7	66.1
MK3	.3	.0	94.8	210.7
SK3	.2	-.1	167.2	336.1
MN4	.1	-.1	173.2	205.3
M4	.2	-.1	137.5	266.6
SN4	.2	-.1	90.2	110.3
MS4	.1	-.1	37.8	301.3
S4	.1	.0	53.1	69.6
2MN6	.1	-.1	162.8	190.1
M6	.1	.0	52.5	237.1
MSN6	.1	.0	35.5	312.1
2MS6	.1	.0	146.6	155.1
2SM6	.1	.0	17.2	26.5
3MN8	.0	.0	89.0	181.0
M8	.1	.1	139.9	189.2
3MS8	.1	.0	80.8	175.1
M12	.1	.0	41.5	301.4



Ø13Ø3Ø Ø6/Ø8/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
6
4
2
Ø
2
4
6
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X1Ø^Ø)

DAILY RESIDUALS (CM/SEC)

STATION 013 DEPTH 030 BEAUFORT SEA 70 7.9 N 134 19.9 W
MAJOR COMPONENT 45 MINOR COMPONENT 315 DEGREES

AUG. 7 1975										
MAJOR COMPONENT	1	5	2	11	6	-3	-6	-4	-4	-1
MINOR COMPONENT	1	-1	-3	-4	-4	-1	1	-2	-2	-1
AUG. 17 1975										
MAJOR COMPONENT	2	-1	-4	-5	-1	-2	-1	-1	0	6
MINOR COMPONENT	-3	-2	2	1	-1	1	2	2	1	0
AUG. 27 1975										
MAJOR COMPONENT	12	4	3	-6	-1	2	-1	4	5	0
MINOR COMPONENT	-7	-3	-4	2	-1	-3	2	-2	-1	1
SEPT 6 1975										
MAJOR COMPONENT	-1	-7	-2							
MINOR COMPONENT	1	1	-1							

FREQUENCY DISTRIBUTION OF DIRECTION AND RATE

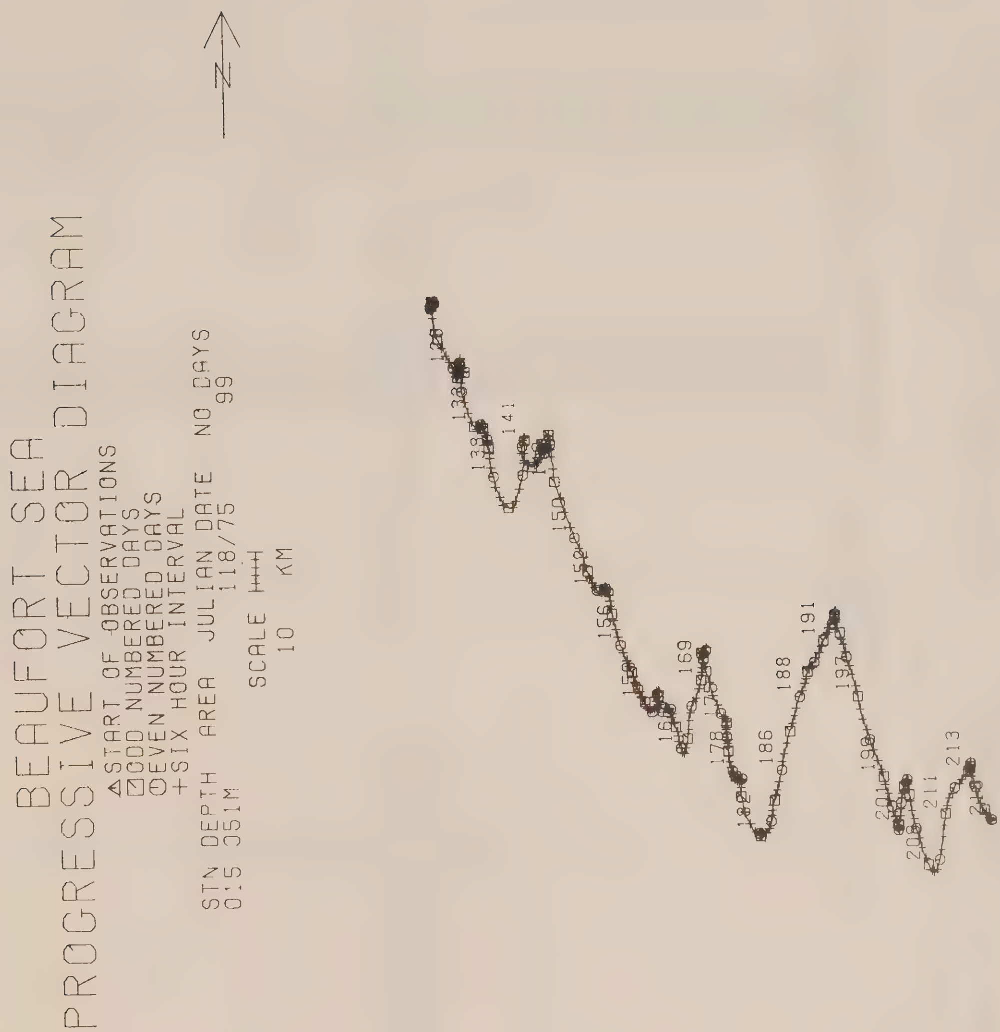
STN 015 DEPTH 051 BEAUFORT SEA 70 17.3 N 133 35.3 W LENGTH OF RECORD=100 DAYS

START OF RECORD 00 MN 21 HR 28 DY 04 MO 75 YR RATE OF OBSER.= 2 PER HOUR

CMS/SEC

DIR	001 TO 004	005 TO 009	010 TO 014	015 TO 019	020 TO 024	025 TO 029	030 TO 034	035 TO 039	040 TO 044	045 TO 049	050 TO 054	055 TO 059	060 TO 064	065 TO 069	070 TO 074	075 TO 079	080 TO 084	085 TO 089	090 TO 094	095 TO 099	100 TO 104	105 TO 109	110 TO 114	115 TO 119	120 TO 124	
0- 9	094	190	087	010																						381
10- 19	135	225	101	035																						496
20- 29	069	105	029																							203
30- 39	077	066	003																							146
40- 49	046	029	001																							76
50- 59	030	021																								51
60- 69	033	010																								43
70- 79	018	015																								33
80- 89	021	008																								29
90- 99	025	004																								29
100-109	037	015																								52
110-119	041	019																								60
120-129	056	019																								75
130-139	074	058																								132
140-149	075	113	010																							198
150-159	099	207	133	021	002																					462
160-169	113	273	216	055	003																					660
170-179	113	250	100	024	005																					492
180-189	074	124	018	001																						217
190-199	039	044	001																							84
200-209	053	016																								69
210-219	022	006																								28
220-229	013	006																								19
230-239	006																									6
240-249	007																									7
250-259	013																									13
260-269	012																									12
270-279	028																									28
280-289	026	004																								30
290-299	019	005																								24
300-309	002																									2
310-319																										0
320-329																										0
330-339	010																									10
340-349	038	002																								40
350-359	063	025	010																							98
	1581	1859	709	146	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4305

NUMBER OF ZERO RATES 481


BEAUFORT SEA
PROGRESSIVE VECTOR DIAGRAM
△START OF OBSERVATIONS
⊡ODD NUMBERED DAYS
⊙EVEN NUMBERED DAYS
+SIX HOUR INTERVAL
STN DEPTH AREA JULIAN DATE NO DAYS
015 351M 118/75 99
SCALE
10 KM
N
141
150
152
156
169
178
186
188
191
197
213

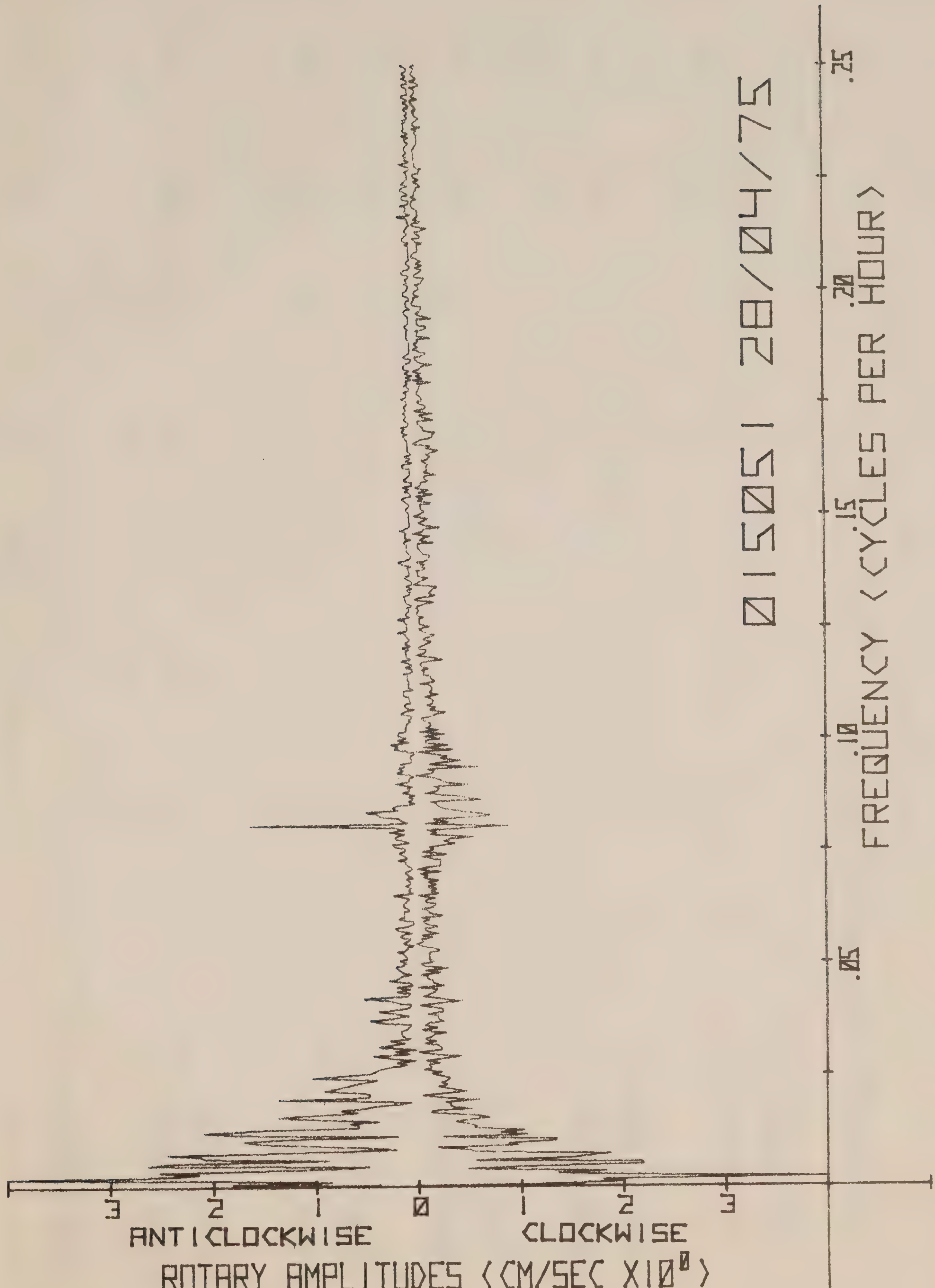
TIDAL CURRENT ELLIPSE

STN 015 DEPTH 051 BEAUFORT SEA 70 17.3 N 133 35.3 W

STARTING TIME OF ANALYSED DATA 0 MIN 22 HR 28 DAY 4 MON 75 YR

LENGTH OF DATA 99 DAYS 15 HOURS

CONSTITUENT NAME	AMPLITUDES (CMS/SEC) MAJOR AXIS	MINOR AXIS	INCLINATION	GREENWICH PHASE LAG
Z0	2.2	.0	135.8	180.0
MM	1.9	.1	82.3	295.0
MSF	1.6	.4	94.0	291.8
2Q1	.1	.0	158.3	235.4
Q1	.3	.1	85.0	211.9
O1	.3	.1	81.5	240.3
NO1	.1	-.1	31.5	176.0
K1	.5	.1	71.8	181.6
J1	.2	-.1	89.5	359.6
OO1	.1	-.1	22.6	109.7
MNS2	.3	.0	104.6	94.7
MU2	.2	.0	88.9	36.0
N2	.2	.0	128.2	185.0
M2	1.3	.3	98.6	160.3
L2	.3	-.1	105.8	179.4
S2	.7	-.1	92.8	211.3
KJ2	.2	-.1	73.7	54.8
2SM2	.3	-.2	78.1	281.2
MO3	.0	.0	61.5	302.8
M3	.0	.0	19.4	306.4
MK3	.1	.0	63.4	196.1
SK3	.1	.0	178.0	116.1
MN4	.1	.0	28.8	38.7
M4	.1	.0	62.3	270.7
SN4	.1	.0	142.4	68.1
MS4	.1	-.1	61.1	82.7
S4	.1	.0	96.0	195.6
2MN6	.0	.0	3.6	235.6
M6	.0	.0	52.8	312.5
MSN6	.0	.0	70.4	322.6
2MS6	.0	.0	120.7	15.9
2SM6	.0	.0	68.8	252.7
3MN8	.0	.0	112.6	64.3
M8	.0	.0	137.6	321.0
3MS8	.0	.0	105.9	318.9
M12	.0	.0	133.2	303.4



Ø15Ø51 28/Ø4/75
FREQUENCY (CYCLES PER HOUR)
.05
.10
.15
.20
.25
3
2
1
Ø
1
2
3
ANTICLOCKWISE
CLOCKWISE
ROTARY AMPLITUDES (CM/SEC X1Ø^Ø)

DAILY RESIDUALS (CM/SEC)

STATION 015 DEPTH 051 BEAUFORT SEA 70 17.3 N 133 35.3 W
MAJOR COMPONENT 0 MINOR COMPONENT 270 DEGREES

APR. 29 1975										
MAJOR COMPONENT	-1	-1	-1	2	0	-10	-9	-3	2	2
MINOR COMPONENT	0	1	1	0	0	-1	-4	-1	0	0
MAY 9 1975										
MAJOR COMPONENT	0	-2	-5	-10	0	-1	-4	-2	-8	-9
MINOR COMPONENT	0	-1	1	-3	-2	-1	-1	0	-1	-4
MAY 19 1975										
MAJOR COMPONENT	9	11	-1	-6	4	3	-3	5	-2	-11
MINOR COMPONENT	-4	-1	1	-3	-3	-1	0	-2	0	-1
MAY 29 1975										
MAJOR COMPONENT	-17	-10	-6	0	0	-6	-9	-8	-5	-4
MINOR COMPONENT	-6	-4	-3	-2	-1	-1	-2	-3	-2	-2
JUNE 8 1975										
MAJOR COMPONENT	-3	4	1	-4	0	-5	-6	2	10	7
MINOR COMPONENT	-2	-2	1	-1	-3	-1	-2	-2	-1	-3
JUNE 18 1975										
MAJOR COMPONENT	6	2	1	-5	-13	-3	-4	-4	-6	-2
MINOR COMPONENT	-1	0	-1	0	-4	-2	0	0	-1	-1

DAILY RESIDUALS (CM/SEC)

STATION 015 DEPTH 051 BEAUFORT SEA 70 17.3 N 133 35.3 W
MAJOR COMPONENT 0 MINOR COMPONENT 270 DEGREES

JUNE 28 1975									
MAJOR COMPONENT									
-1	-5	-12	-1	4	6	9	11	10	7
MINOR COMPONENT									
-2	0	-5	0	-3	-1	-2	-2	-3	-3
JULY 8 1975									
MAJOR COMPONENT									
3	6	5	2	1	-5	-7	-11	-13	-11
MINOR COMPONENT									
-2	-3	-3	-1	0	-1	-2	-3	-3	-4
JULY 18 1975									
MAJOR COMPONENT									
-9	-6	-2	1	6	5	2	-4	-10	-11
MINOR COMPONENT									
-2	-2	0	0	-1	-1	-1	-1	-2	-3
JULY 28 1975									
MAJOR COMPONENT									
1	13	8	5	2	-1	-6	-7	-3	
MINOR COMPONENT									
-3	-2	-3	-4	-1	0	-1	-2	-2	